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GLOBAL DATA MONITORING REPORT

May, 1997

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 $m\ s^{-1}$ (wind speed),
≥ 30 degrees (direction).

2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSUE									
CG2248	ALL	MSLP	SUR	43	43	100	0.0	0.0	0.0
C6FA6	ALL	MSLP	SUR	34	0	0	1.8	-6.0	6.3
C6LC5	ALL	MSLP	SUR	23	0	0	2.8	-7.1	7.6
DLDQ	ALL	MSLP	SUR	25	0	0	0.9	-4.0	4.1
ELGH5	ALL	MSLP	SUR	25	1	4	2.9	-6.7	7.4
ELRE5	ALL	MSLP	SUR	63	0	0	4.2	6.2	7.5
LAXS2	ALL	MSLP	SUR	47	0	0	0.9	6.1	6.2
OWME	ALL	MSLP	SUR	21	0	0	4.8	5.4	7.3
UCTA	ALL	MSLP	SUR	61	2	3	2.3	9.0	9.3
VCLX	ALL	MSLP	SUR	25	18	72	3.8	-7.7	8.6
VJDI	ALL	MSLP	SUR	30	9	30	5.4	6.1	8.2
VVJS	ALL	MSLP	SUR	21	0	0	0.8	-4.8	4.9
V2SM	ALL	MSLP	SUR	67	0	0	1.4	-4.6	4.8
XLW363	ALL	MSLP	SUR	37	0	0	6.5	-0.7	6.6
ZCAM9	ALL	MSLP	SUR	39	0	0	2.8	-4.8	5.6
31024	ALL	MSLP	SUR	270	121	45	0.9	8.0	8.1
4XFN	ALL	MSLP	SUR	26	0	0	2.4	-4.2	4.8
9MCD	ALL	MSLP	SUR	36	0	0	1.1	4.4	4.5
9VHU	ALL	MSLP	SUR	25	0	0	1.1	6.4	6.5
WIND SPEED									
ELHW4	ALL	SPEED	SUR	24	0	0	3.7	6.6	7.5
FNQI	ALL	SPEED	SUR	34	0	0	5.2	13.2	14.2
FNZQ	ALL	SPEED	SUR	53	0	0	4.2	6.1	7.4
LACU2	ALL	SPEED	SUR	20	0	0	3.4	5.5	6.4
PCAZ	ALL	SPEED	SUR	33	0	0	3.5	5.6	6.5
PCZM	ALL	SPEED	SUR	21	0	0	4.9	5.5	7.3
PDIU	ALL	SPEED	SUR	44	0	0	4.7	5.2	7.1
VCTJ	ALL	SPEED	SUR	23	0	0	3.4	5.1	6.1
YJQK4	ALL	SPEED	SUR	33	0	0	2.8	5.0	5.8
3EMW5	ALL	SPEED	SUR	24	0	0	2.5	5.8	6.3
3FGR5	ALL	SPEED	SUR	48	0	0	6.3	7.2	9.5
9VMY	ALL	SPEED	SUR	20	0	0	8.6	10.0	13.2
WIND DIRECTION									
LAVX4	ALL	DIRN.	SUR	25	0	0	43.6	32.1	54.1
2062	ALL	DIRN.	SUR	24	0	0	55.7	-32.0	64.3
45007	ALL	DIRN.	SUR	72	0	0	29.8	-32.7	44.3
46146	ALL	DIRN.	SUR	49	0	0	65.4	-36.4	74.9
52008	ALL	DIRN.	SUR	51	0	0	60.2	-32.7	68.5

AVAILABILITY – SHIP/SYNOP – MAY 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 19015

FIGURE 1

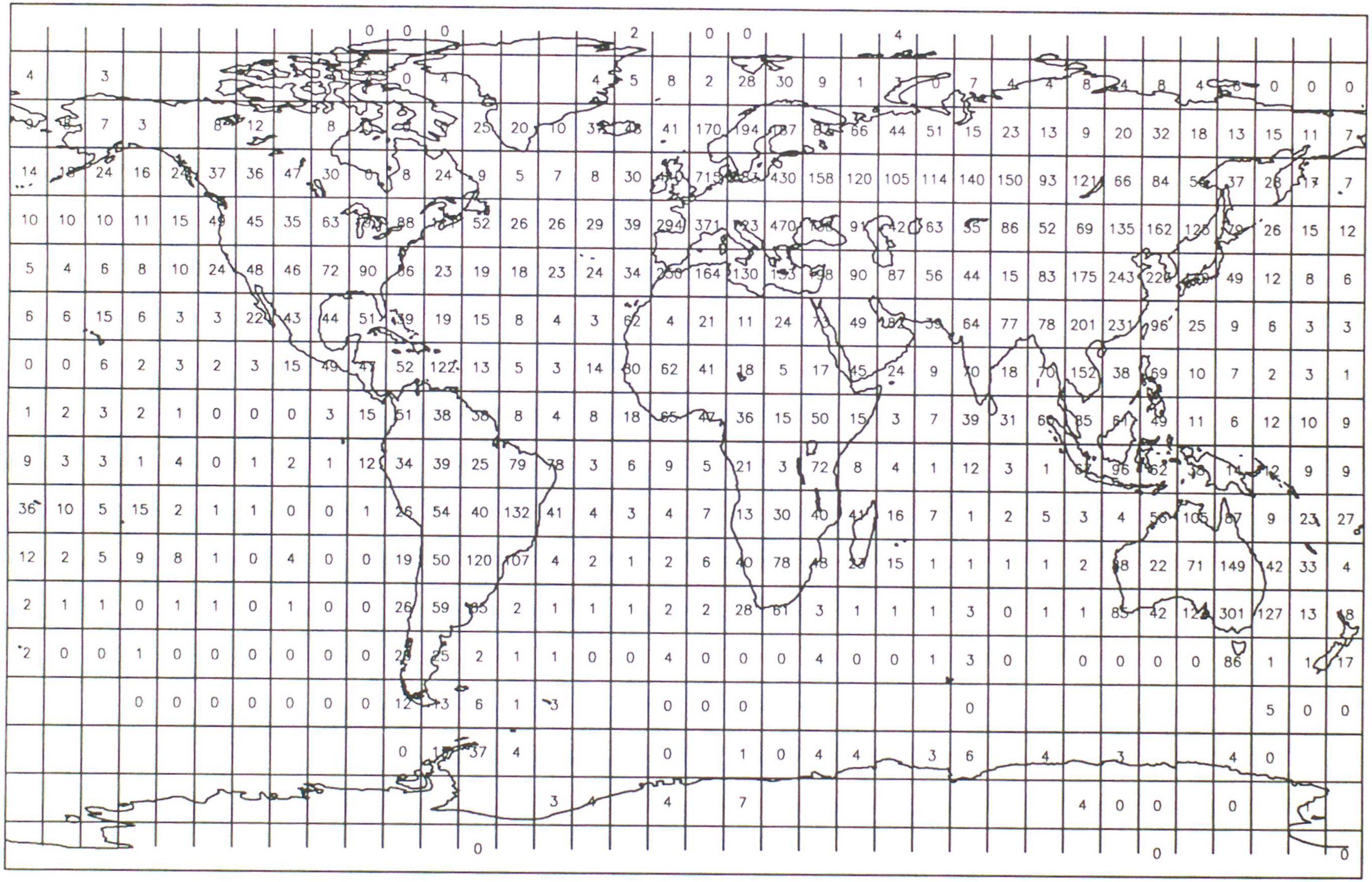


TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.¦bias¦	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17506	-52.0	69.6	ALL	MSLP	SUR	288	0	0	2.7	-4.9	5.6
17907	-38.1	62.7	ALL	MSLP	SUR	235	0	0	3.7	5.5	6.6
25573	84.8	-4.3	ALL	MSLP	SUR	20	20	100	0.0	0.0	0.0
32908	-34.6	-94.2	ALL	MSLP	SUR	203	71	35	3.2	5.0	5.9
33567	-40.4	-16.6	ALL	MSLP	SUR	56	31	55	2.9	12.2	12.6
33951	-57.6	-29.2	ALL	MSLP	SUR	57	38	67	3.6	-10.5	11.1
33952	-41.6	-10.8	ALL	MSLP	SUR	249	24	10	4.1	7.3	8.3
46956	28.0	-128.4	ALL	MSLP	SUR	97	28	29	2.5	9.2	9.5
54901	-42.7	-166.0	ALL	MSLP	SUR	74	74	100	0.0	0.0	0.0
55516	13.8	66.2	ALL	MSLP	SUR	271	0	0	1.2	-4.0	4.1
56536	-49.0	93.8	ALL	MSLP	SUR	66	46	70	3.5	-11.4	11.9
WIND DIRECTION											
44513	53.0	-23.5	ALL	DIRN.	SUR	217	0	0	90.9	17.0	92.5

AVAILABILITY – DRIFTER – MAY 1997

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5263

FIGURE 2

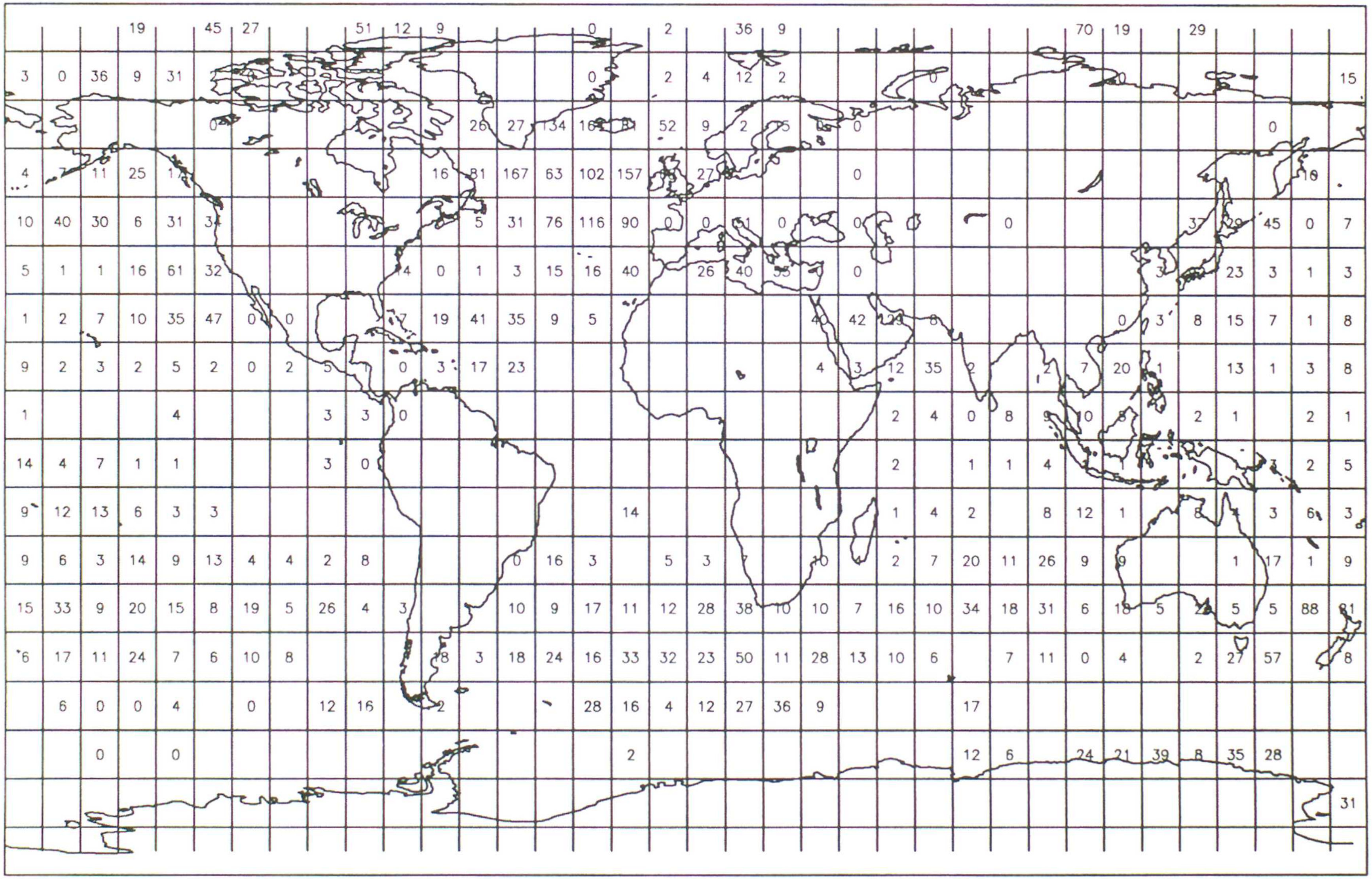

19 45 27 51 12 9 0 2 36 9 70 19 29
3 0 36 9 31 0 2 4 12 2 15
0 26 27 134 16 52 9 2 0 0
4 7 11 25 17 16 81 167 63 102 157 27 0 10
10 40 30 6 31 34 5 31 76 116 90 0 0 51 0 0 0 37 29 45 0 7
5 1 1 16 61 32 14 0 1 3 15 16 40 26 40 55 0 3 23 3 1 3
1 2 7 10 35 47 0 0 17 19 41 35 9 5 40 42 23 8 0 3 8 15 7 1 8
9 2 3 2 5 2 0 2 5 0 3 17 23 4 3 12 35 2 2 7 20 1 13 1 3 8
1 4 3 3 0 2 4 0 8 9 10 8 2 1 2 1
14 4 7 1 1 3 0 2 1 1 4 3 2 5
9 12 13 6 3 3 14 1 4 2 8 12 1 8 4 3 6 3
9 6 3 14 9 13 4 4 2 8 0 16 3 5 3 7 10 2 7 20 11 26 9 9 1 17 1 9
15 33 9 20 15 8 19 5 26 4 3 10 9 17 11 12 28 38 10 10 7 16 10 34 18 31 6 18 5 28 5 5 88 81
6 17 11 24 7 6 10 8 18 3 18 24 16 33 32 23 50 11 28 13 10 6 7 11 0 4 2 27 57 8
6 0 0 4 0 12 16 2 28 16 4 12 27 36 9 17
0 0 2 12 6 24 21 39 8 35 28
31

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	112	2	2	0	1.0	4.8	4.9
60468	35.6N	6.2E	1052	S8	112	112	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	M	112	111	99	0	0.0	14.9	14.9
60535	34.7N	3.3E	1144	S8	82	0	0	1	1.1	-6.5	6.6
60571	31.6N	2.2W	773	S8	109	0	0	0	1.1	-4.4	4.5
60670	24.6N	9.5E	1054	S8	96	3	3	75	1.2	8.4	8.5
61233	15.2N	7.3W	265	M	82	0	0	0	1.2	-4.0	4.2
62402	26.2N	32.7E	77	M	44	43	98	0	0.0	0.1	0.1
63330	13.5N	39.5E	2212	MS	57	0	0	2	1.3	-4.4	4.6
63333	11.1N	39.7E	1916	MS	82	1	1	1	1.1	6.6	6.7
63451	8.7N	39.0E	1876	MS	56	0	0	0	1.5	-4.9	5.1
63453	8.8N	39.8E	1062	S	54	0	0	0	1.6	11.5	11.6
63478	5.1N	44.6E	320	MS	62	0	0	0	1.5	7.5	7.6
68014	19.6S	18.1E	1411	S8	82	0	0	88	1.4	-6.0	6.2
68442	29.1S	26.3E	1354	S8	117	0	0	0	1.0	-6.0	6.1
68488	28.4S	31.1E	1279	S8	64	64	100	0	0.0	0.0	0.0
68752	32.8S	27.4E	524	S8	111	0	0	0	0.9	-8.4	8.4

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30320	56.9N	105.7E	669	MS	60	60	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	M	58	1	2	2	1.3	9.9	10.0
35173	51.6N	69.8E	620	MS	57	57	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	87	2	2	2	1.3	6.8	6.9
40743	36.2N	57.7E	941	MS	116	0	0	1	1.4	-5.6	5.8
40762	35.3N	59.2E	1333	MS	120	31	26	0	0.8	-13.8	13.8
40763	35.2N	58.5E	1060	MS	45	1	2	0	1.1	-6.3	6.4
40783	32.4N	49.7E	1972	MS	81	0	0	1	1.6	-5.5	5.7
40789	33.8N	55.1E	921	MS	73	1	1	0	1.5	8.5	8.6
40798	32.3N	50.9E	1991	MS	86	1	1	0	1.3	-7.6	7.7
40836	30.8N	51.7E	1880	MS	79	3	4	4	1.2	8.5	8.6
40859	29.0N	53.7E	1383	MS	83	1	1	0	1.6	8.7	8.8
41254	23.1N	57.7E	1755	S8	81	81	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	24	1	4	0	1.6	6.2	6.4
41466	13.7N	44.1E	1385	8	30	2	7	3	0.9	-6.5	6.6
44477	27.0N	87.4E	1445	S8	43	43	100	0	0.0	0.0	0.0
51573	42.9N	89.2E	37	MS	124	0	0	8	1.8	-4.4	4.8
52602	38.8N	93.4E	2734	S	124	0	0	0	1.8	-5.1	5.4
56444	28.5N	98.9E	3488	S	121	121	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	115	1	1	3	2.9	7.6	8.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
82704	7.6S	72.7W	170	MS	81	2	2	1	2.1	-4.2	4.7
82825	8.8S	63.9W	95	MS	66	2	3	73	2.0	-6.6	6.9
83214	10.3S	54.9W	285	MS	48	0	0	0	1.3	-6.9	7.0
83235	12.4S	46.4W	660	MS	84	3	4	1	1.0	6.6	6.7
83319	14.7S	52.4W	315	MS	55	0	0	0	1.0	-5.0	5.1
83332	14.1S	46.4W	950	MS	83	30	36	0	0.9	13.7	13.7
83408	14.3S	43.8W	556	MS	83	1	1	0	1.1	10.9	11.0
83423	16.7S	49.3W	729	MS	82	0	0	0	1.0	-5.4	5.5
83488	17.8S	42.9W	1097	MS	83	83	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	66	1	2	3	1.8	-6.8	7.0
83538	18.2S	43.6W	1297	MS	81	3	4	7	2.8	-10.5	10.9
83577	19.8S	47.9W	743	MS	26	1	4	23	1.6	-4.2	4.5
83587	19.9S	43.9W	850	MS	82	1	1	1	1.3	-8.1	8.2
83689	21.3S	43.8W	1171	MS	73	1	1	0	1.0	4.6	4.7
83704	22.3S	53.9W	369	MS	79	12	15	38	2.4	-9.5	9.8

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83773	23.1S	48.9W	793	S	47	1	2	4	1.1	-5.9	6.0
83836	25.5S	50.6W	837	MS	87	1	1	0	1.2	-4.3	4.5
83916	28.2S	51.5W	806	MS	88	1	1	1	1.3	-4.9	5.1
84401	5.2S	80.6W	55	MS	91	0	0	11	1.6	4.6	4.9
84425	5.9S	76.1W	184	M	63	0	0	0	1.8	4.0	4.4
84455	6.5S	76.4W	282	MS	59	0	0	0	1.5	6.8	7.0
84472	7.1S	78.5W	2622	S	48	2	4	2	1.8	-5.8	6.1
84501	8.1S	79.0W	30	M	84	0	0	1	1.3	4.6	4.8
84542	9.4S	77.6W	2760	S	36	1	3	3	2.0	4.8	5.2
84686	13.6S	72.0W	3249	S	103	0	0	2	1.7	-4.7	5.0
84782	18.1S	70.3W	469	MS	88	0	0	0	1.5	7.6	7.7
85141	14.5S	67.6W	202	MS	43	0	0	35	2.0	4.3	4.7
85312	19.8S	63.9W	992	S	38	0	0	34	1.3	-4.2	4.4
85394	22.8S	64.3W	381	MS	33	0	0	30	2.5	4.0	4.7
85406	18.3S	70.3W	58	M	120	0	0	4	1.6	6.1	6.3

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
76118	30.4N	109.7W	1040	MS	30	1	3	0	1.0	-11.6	11.6
76539	22.1N	101.0W	1870	MS	81	0	0	0	1.1	-4.1	4.2
76625	20.6N	100.4W	1813	M	57	0	0	0	1.4	-7.7	7.8
76634	20.1N	98.4W	2135	MS	74	0	0	85	2.0	-5.1	5.5
76658	19.2N	103.7W	494	MS	37	0	0	0	1.2	6.1	6.2
76750	18.5N	88.3W	9	MS	75	0	0	1	1.6	-4.2	4.5
76762	17.5N	99.5W	1865	MS	55	55	100	0	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	50	0	0	0	1.2	4.0	4.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91339	5.5N	153.8E	3	MS	32	0	0	3	2.4	-5.5	6.0
94955	41.6S	145.7E	684	MS	20	20	100	0	0.0	0.0	0.0
97700	3.3S	127.1E	20	M	84	0	0	21	1.4	-4.3	4.5

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	102	102	100	0	0.0	0.0	0.0
11024	48.4N	15.4E	860	S8	124	1	1	0	0.9	-12.9	12.9
11346	47.3N	12.8E	917	S	87	0	0	11	1.3	-4.3	4.5
16020	46.5N	11.3E	1461	MS	107	107	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	124	120	97	0	0.1	-14.2	14.2
16549	39.1N	8.3E	12	MS	122	0	0	0	1.1	-4.4	4.5
16614	40.4N	21.3E	604	MS	102	1	1	1	1.3	-7.3	7.4
40072	34.4N	40.9E	182	M	77	0	0	79	2.4	-6.9	7.3

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89264	71.4S	68.9W	780	S	78	3	4	6	4.2	4.9	6.5
89324	80.0S	120.0W	1530	S	94	14	15	45	4.7	-6.3	7.9
89606	78.5S	106.9E	3490	S7	118	13	11	30	3.9	6.0	7.2
89744	74.0S	43.0E	3353	S	91	0	0	25	3.8	6.2	7.3
89860	74.2S	160.3E	1772	S	86	3	3	10	4.0	-5.3	6.6

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

- :N REP. :Number of observations received excluding duplicates.
- :PG :Percentage of observations with gross errors.
- :PR :Percentage of observations rejected by quality control including rejections from the duplicate check.
- :PC :Percentage of observations with calm winds.
- :RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
- :BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	124	3	6	1.8	0.4	123	0	9	2	10.2	-0.1
AAH	28	0	14	4.3	1.4	25	0	16	0	13.3	-0.1
AAL	5611	0	1	1.8	0.2	5571	0	2	0	8.1	0.9
AAR	2059	1	2	1.9	-0.1	2035	0	4	0	9.7	0.9
ACA	1850	0	1	1.8	0.1	1897	0	2	1	6.7	0.5
ACI	30	7	7	1.3	0.5	28	0	0	0	8.3	-1.4
AEA	731	1	4	2.7	1.1	700	0	3	0	8.5	1.4
AEL	455	1	4	1.8	-0.5	440	0	3	0	7.5	1.4
AEY	151	1	1	1.8	0.6	139	0	2	0	7.0	1.3
AFB	39	3	5	3.2	1.3	43	0	12	0	14.1	1.5
AFL	202	2	3	1.9	0.7	198	0	5	1	8.5	1.2
AFR	1584	1	7	1.8	0.0	1499	0	8	0	8.6	1.0
AIH	543	0	2	1.8	0.0	473	0	4	0	9.0	0.4
AJM	67	3	1	1.6	-0.1	53	0	6	0	10.3	1.9
AMT	343	1	3	2.4	1.2	330	0	2	0	10.5	-1.0
AMX	310	3	4	1.9	-0.1	305	0	4	0	8.6	0.7
ANA	1107	1	2	1.8	-0.2	1102	0	3	0	9.9	0.3
ANZ	2288	3	5	1.9	0.1	2215	0	3	0	8.0	1.2
AOM	657	3	6	2.0	1.1	507	0	4	0	8.1	1.0
ARP	41	0	7	2.5	0.3	34	0	3	0	6.4	1.8
ATN	60	0	7	2.8	-2.3	61	0	98	0	19.8	7.5
AUA	76	0	1	1.8	-0.8	78	0	1	0	7.6	1.1
AVA	468	0	2	1.8	0.3	464	0	5	0	8.9	1.6
AVN	56	0	0	1.4	0.4	57	0	0	0	7.6	0.7
AXA	122	2	4	2.4	1.2	122	0	1	1	10.3	0.6
AZA	638	1	4	1.8	0.0	622	0	4	0	8.5	1.6
BAL	1090	1	10	1.8	-0.2	1037	0	12	0	8.9	1.3
BAW	1937	1	10	1.9	0.1	1911	0	11	0	7.7	1.1
BBB	70	1	0	1.4	0.0	61	0	2	0	7.7	0.7
BWA	351	2	7	3.3	2.6	344	0	5	0	9.5	0.9
CAL	1825	1	1	1.7	-0.1	1834	0	2	0	8.9	1.2
CCA	152	0	100	2.1	0.1	126	1	100	0	12.5	0.0
CDN	1816	0	1	1.9	0.3	1788	0	2	0	8.7	0.8
CES	332	0	1	1.8	0.4	314	2	5	0	10.9	0.1
CFC	32	0	19	2.8	0.7	32	0	16	0	8.2	1.9
CFG	1292	0	2	1.9	-1.0	1272	0	2	0	7.6	0.9
CKS	237	0	2	1.8	0.4	224	0	3	0	7.2	-0.5
CKT	220	0	5	1.8	0.4	207	0	8	0	9.7	0.0
CLX	336	0	1	1.9	-0.4	341	0	2	0	6.9	0.5
CMI	767	1	2	1.5	0.7	731	0	3	1	8.0	1.4
CMM	397	1	1	1.8	0.3	398	0	2	1	6.3	0.4
COA	1057	1	3	1.9	0.4	1066	0	3	0	9.2	0.6
CPA	35	0	0	1.7	0.1	38	0	3	0	7.6	1.3
CRL	575	2	4	1.9	0.3	534	0	3	1	7.8	0.7
CSA	24	0	0	1.3	-0.7	24	0	0	0	7.6	-0.3
CTB	228	0	1	1.4	0.1	227	0	2	0	7.3	0.8
CTM	60	0	15	2.9	-1.5	60	0	18	0	7.2	0.8
CUB	599	1	5	2.3	1.3	543	0	100	0	9.1	1.3
DAF	24	0	21	4.0	0.0	23	0	0	0	7.6	0.2
DAL	6140	1	2	2.0	0.5	6156	0	2	0	7.9	0.5
DHL	77	16	100	4.7	-3.0	79	0	27	0	9.5	-0.1
DLH	4040	0	5	1.8	0.2	4027	0	9	3	7.0	0.9
DOA	93	0	2	1.8	-0.8	93	0	2	0	7.0	-0.1
EIA	188	2	6	1.7	0.5	183	0	6	1	9.1	-0.2
ELY	159	0	6	1.8	0.3	162	0	6	0	8.8	1.1
EVA	476	1	2	1.7	-0.2	483	0	2	0	8.8	0.8
EWW	140	1	68	3.1	1.2	142	1	100	0	17.7	5.5
FDX	1029	0	2	2.0	0.5	1027	0	4	0	9.8	0.2
FIN	474	0	3	1.9	0.8	473	0	4	1	7.0	0.6

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FJI	438	7	8	1.8	0.9	409	0	2	0	8.6	0.5
FOM	143	1	1	1.6	0.4	145	0	39	0	8.0	1.4
GAF	202	0	1	2.1	0.7	206	0	1	1	6.4	0.4
GCO	20	0	0	1.8	1.2	21	0	5	0	10.2	2.9
GHA	32	0	3	1.8	0.7	20	0	5	0	6.5	2.2
GIA	202	1	3	1.9	0.7	174	0	5	0	10.2	0.0
HAL	1589	1	4	1.8	0.4	1569	0	5	0	11.3	0.2
HLF	222	0	1	2.0	-1.0	225	1	4	0	7.7	1.6
HRH	55	11	16	1.9	0.4	49	0	6	0	7.7	0.8
IBE	3103	1	9	2.1	0.6	3097	0	10	0	9.0	0.9
ICE	773	0	1	1.7	0.2	763	0	2	0	7.5	1.0
JAL	5681	1	1	1.8	0.3	5669	0	2	0	8.0	0.8
JAZ	44	0	0	1.5	1.2	46	0	0	0	6.4	1.0
KAL	3504	1	2	1.9	-0.3	3430	0	3	0	9.3	1.0
KLM	3206	0	2	1.8	0.4	3215	0	2	1	7.0	0.9
LDA	315	1	4	2.0	-0.5	308	0	6	0	8.0	0.5
LDI	377	0	13	1.9	-0.9	373	0	14	0	8.0	0.8
LIB	392	1	3	1.8	1.0	379	0	3	0	8.3	1.4
LOT	423	0	1	2.1	-1.0	427	0	3	0	9.1	0.6
LTU	915	0	3	1.7	0.2	913	0	4	0	7.7	1.0
MAS	345	1	3	2.0	0.0	295	0	3	0	9.7	1.3
MDA	178	0	2	2.0	0.1	177	0	3	0	10.0	0.6
MON	28	0	0	1.2	0.1	25	0	0	0	8.4	3.0
MPH	1158	1	2	1.8	-0.5	1141	0	2	0	7.9	0.4
NCA	633	0	1	1.9	0.4	629	0	3	0	9.1	0.3
NWA	10068	1	2	1.8	0.5	10064	0	2	0	8.4	0.7
OAL	84	0	7	3.4	2.6	82	0	4	0	8.2	1.5
PAC	168	2	5	2.5	0.4	159	0	4	0	8.8	0.0
PAI	27	0	0	2.5	-0.1	27	0	4	0	10.6	0.6
PAL	1143	1	2	1.6	-0.3	1107	0	3	1	9.0	1.0
PAO	196	2	3	1.3	0.0	194	0	3	1	7.8	0.8
QFA	1351	2	3	1.7	0.4	1339	0	3	1	8.4	1.0
RAF	158	1	1	1.5	0.7	158	0	1	0	8.7	0.9
RAM	64	0	2	2.1	-1.1	59	0	3	0	9.6	1.8
RCH	423	3	96	3.0	1.6	417	1	96	0	10.8	2.0
RJA	58	0	2	1.5	0.7	61	2	5	0	6.2	0.3
RKA	86	0	1	1.5	0.0	52	0	10	0	10.3	2.0
ROY	58	0	0	1.7	0.6	62	0	8	0	8.7	-0.5
RRR	59	0	24	2.1	-0.5	59	0	24	0	9.2	2.2
SAA	303	0	1	1.4	-0.4	272	0	2	0	7.2	0.4
SAB	39	0	10	1.8	0.2	39	0	8	0	6.5	1.5
SAS	1175	0	1	1.9	0.2	1177	0	2	1	6.9	0.9
SCX	99	2	2	1.2	0.7	82	0	2	0	7.0	-0.9
SIA	1233	1	2	1.9	-0.5	1202	0	3	0	9.1	0.9
SJM	58	3	5	1.1	0.5	46	0	2	0	10.0	2.2
SLR	119	1	16	1.6	-0.6	124	0	17	0	7.1	0.1
SOL	55	0	0	1.5	1.0	54	0	4	0	9.5	0.3
SPP	343	1	5	2.1	-0.3	322	0	4	0	9.1	1.1
SSV	47	0	2	1.7	0.3	47	2	2	0	4.8	0.1
SVA	105	1	3	1.5	0.1	108	0	100	0	10.3	2.1
SWR	222	0	4	1.8	0.0	226	0	4	0	8.4	1.3
TAP	667	1	3	1.8	-0.3	658	0	4	0	9.0	1.5
THA	404	0	2	1.8	-0.8	379	1	3	0	9.3	1.2
TOW	107	0	1	1.8	0.1	106	0	4	0	8.7	0.7
TPA	30	3	10	1.6	0.1	32	0	6	0	5.3	-1.1
TSC	199	1	6	2.1	-0.1	201	0	8	0	9.8	0.9
TWA	1834	0	2	1.9	0.0	1816	0	3	0	8.9	1.2
UAL	11738	1	2	2.0	0.0	11721	0	2	0	8.4	0.6
ULE	354	1	2	1.8	0.7	348	0	2	0	8.5	1.5

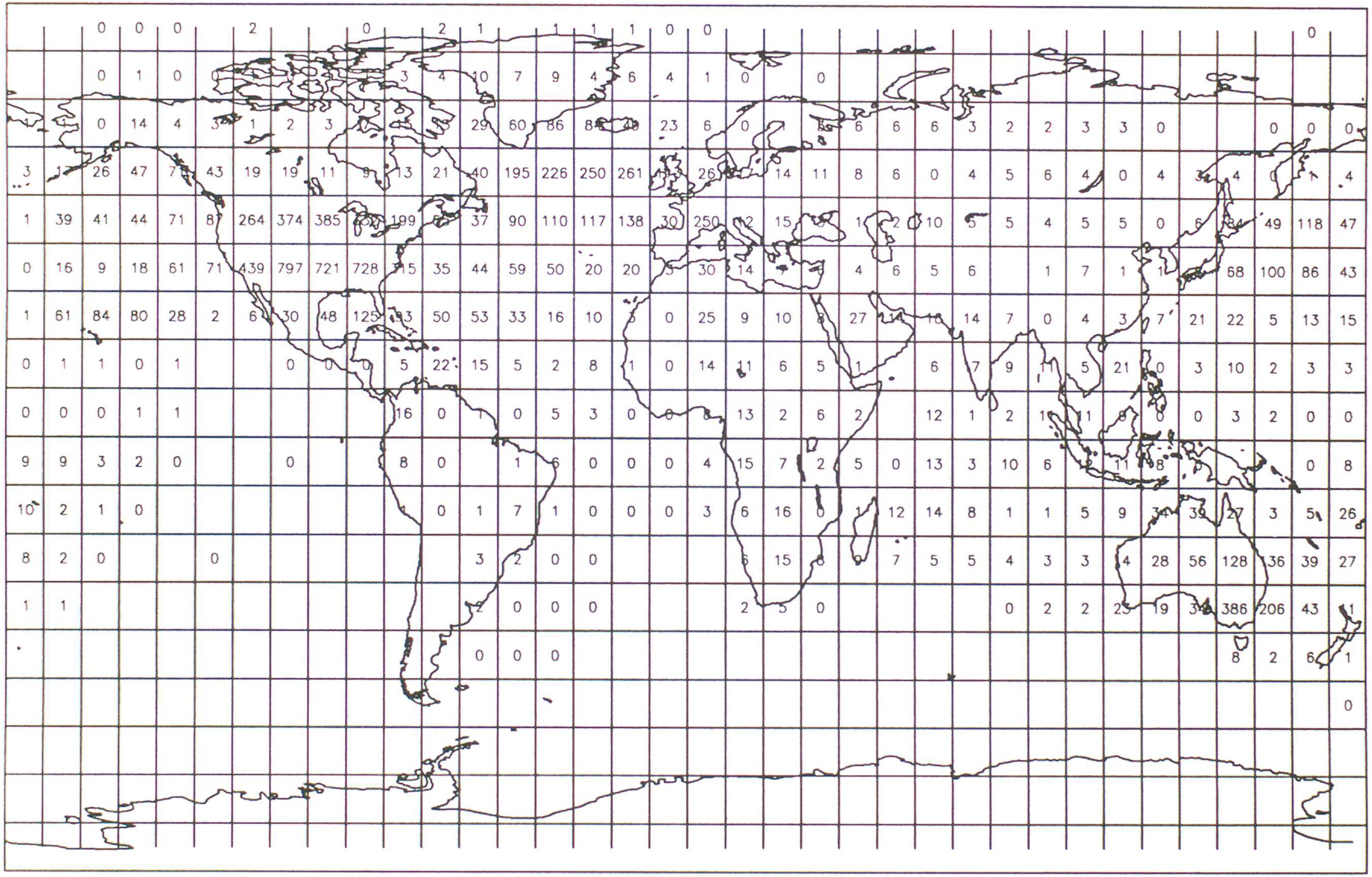
	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UPS	499	1	4	1.9	0.2	500	0	5	0	8.0	0.1
USA	467	1	2	1.6	-0.3	462	0	2	0	8.2	1.3
VIR	274	0	1	1.8	-0.3	276	0	4	0	8.8	1.6
VRG	67	3	4	1.5	0.4	70	0	7	0	10.8	1.5
VSP	163	1	2	1.9	0.5	153	0	3	0	9.3	0.2
AF	29	0	0	1.4	-0.6	31	0	6	0	9.7	1.0
AN	27118	0	1	1.2	0.0	26932	0	1	0	6.9	1.2
BA	22326	0	12	1.3	0.5	22281	0	12	0	6.7	1.4
DL	109552	0	3	1.3	0.1	109552	0	14	0	6.6	1.2
FJ	37	3	16	1.7	1.0	37	0	16	0	9.0	0.7
IT	626	0	0	0.8	-0.1	626	0	1	0	6.7	1.3
KL	12170	0	8	1.3	0.5	12163	0	8	0	6.2	1.2
LH	3548	0	1	1.5	0.2	3515	0	1	1	6.8	1.3
MK	5977	0	1	1.3	0.7	5948	0	1	0	7.8	1.8
NW	36873	0	2	1.4	0.2	36873	0	2	0	6.1	1.1
QF	4534	0	1	1.2	0.4	4534	0	1	0	6.4	1.1
SA	3151	0	1	1.3	0.7	3151	0	0	0	6.9	1.3
SV	2178	0	1	1.2	0.8	2162	0	1	0	6.3	1.4
N	551	2	100	2.8	1.2	487	0	2	0	7.8	-0.1

MEAN DAILY COUNT OF AIRCRAFT 70 - 500 HPA

MAY 1997

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

FIGURE 3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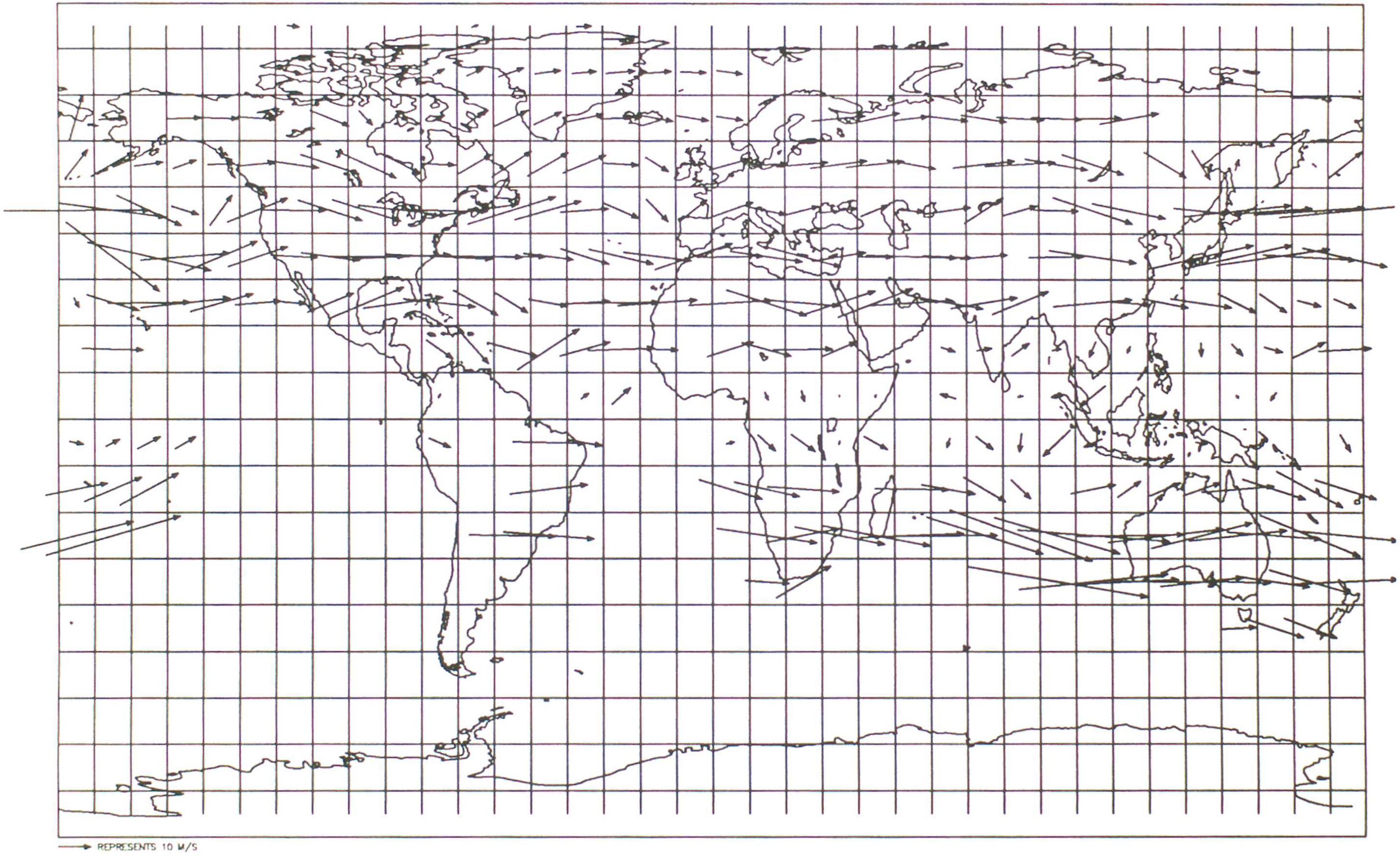
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA FIGURE 4

MAY 1997

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

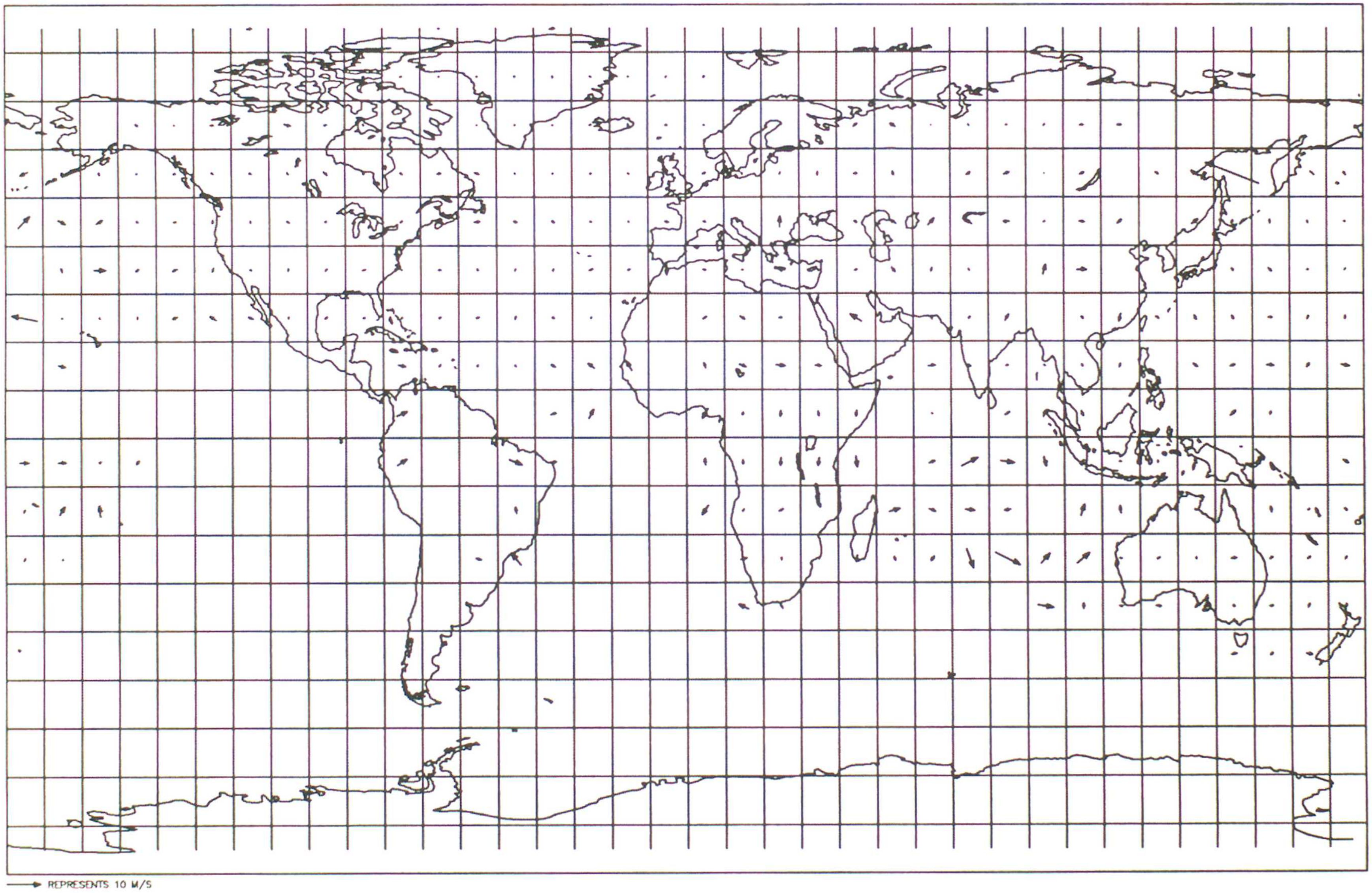


AIRCRAFT MEAN O-B WINDS BETWEEN 70 AND 500 HPA FIGURE 5

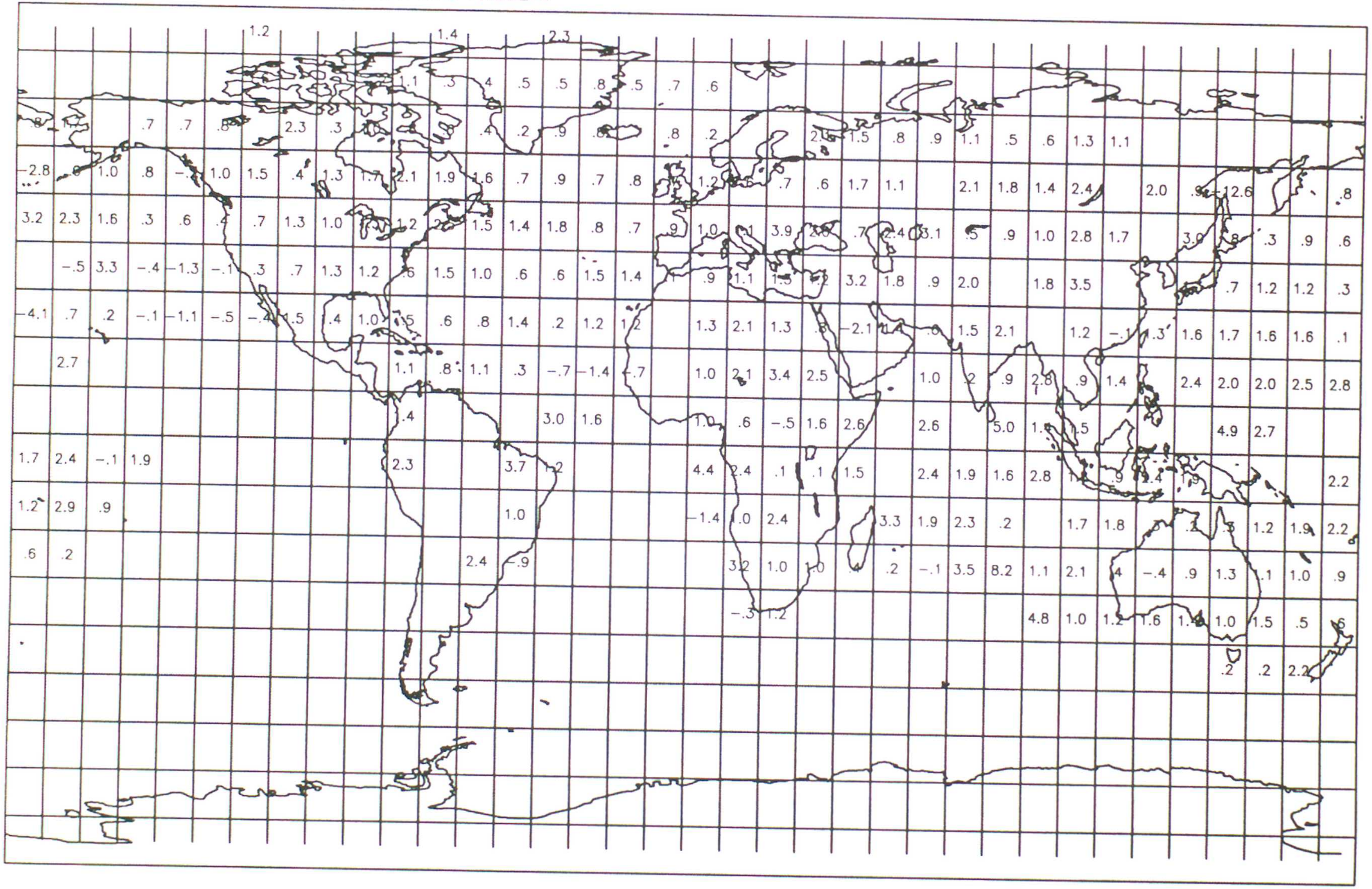
MAY 1997

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
MAY 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


1.2 1.4 2.3
1.1 .3 .4 .5 .5 .8 .5 .7 .6
.8 1.0 .7 .7 .8 2.3 .3 1.0 .8 .8 .4 .2 .9 .8 .8 .2 2.5 1.5 .8 .9 1.1 .5 .6 1.3 1.1
–2.8 .6 1.0 .8 – 1.0 1.5 .4 1.3 1.7 2.1 1.9 1.6 .7 .9 .7 .8 .5 1.2 .5 .7 .6 1.7 1.1 2.1 1.8 1.4 2.4 2.0 .9 12.6 .8
3.2 2.3 1.6 .3 .6 .4 .7 1.3 1.0 .7 1.2 2.2 1.5 1.4 1.8 .8 .7 .9 1.0 .1 3.9 2.0 .7 2.4 3.1 .5 .9 1.0 2.8 1.7 3.0 .8 .3 .9 .6
–.5 3.3 –.4 –1.3 –.1 .3 .7 1.3 1.2 .6 1.5 1.0 .6 .6 1.5 1.4 .1 .9 1.1 1.5 .2 3.2 1.8 .9 2.0 1.8 3.5 .7 1.2 1.2 .3
–4.1 .7 .2 –.1 –1.1 –.5 –.4 1.5 .4 1.0 .5 .6 .8 1.4 .2 1.2 1.2 1.3 2.1 1.3 .8 –2.1 1.4 .6 1.5 2.1 1.2 –.1 1.3 1.6 1.7 1.6 1.6 .1
2.7 1.1 .8 1.1 .3 –.7 –1.4 –.7 1.0 2.1 3.4 2.5 1.0 .2 .9 2.8 .9 1.4 2.4 2.0 2.0 2.5 2.8
.4 3.0 1.6 1.0 .6 –.5 1.6 2.6 2.6 5.0 1.5 .5 4.9 2.7
1.7 2.4 –.1 1.9 2.3 3.7 .2 4.4 2.4 .1 .1 1.5 2.4 1.9 1.6 2.8 1.1 .9 .4 1.9 2.2
1.2 2.9 .9 1.0 –1.4 1.0 2.4 3.3 1.9 2.3 .2 1.7 1.8 .2 .3 1.2 1.9 2.2
.6 .2 2.4 .9 3.2 1.0 1.0 .4 .2 –.1 3.5 8.2 1.1 2.1 .4 –.4 .9 1.3 .1 1.0 .9
–.3 1.2 4.8 1.0 1.2 1.6 1.4 1.0 1.5 .5 .6
.2 .2 2.2

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7

MAY 1997

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

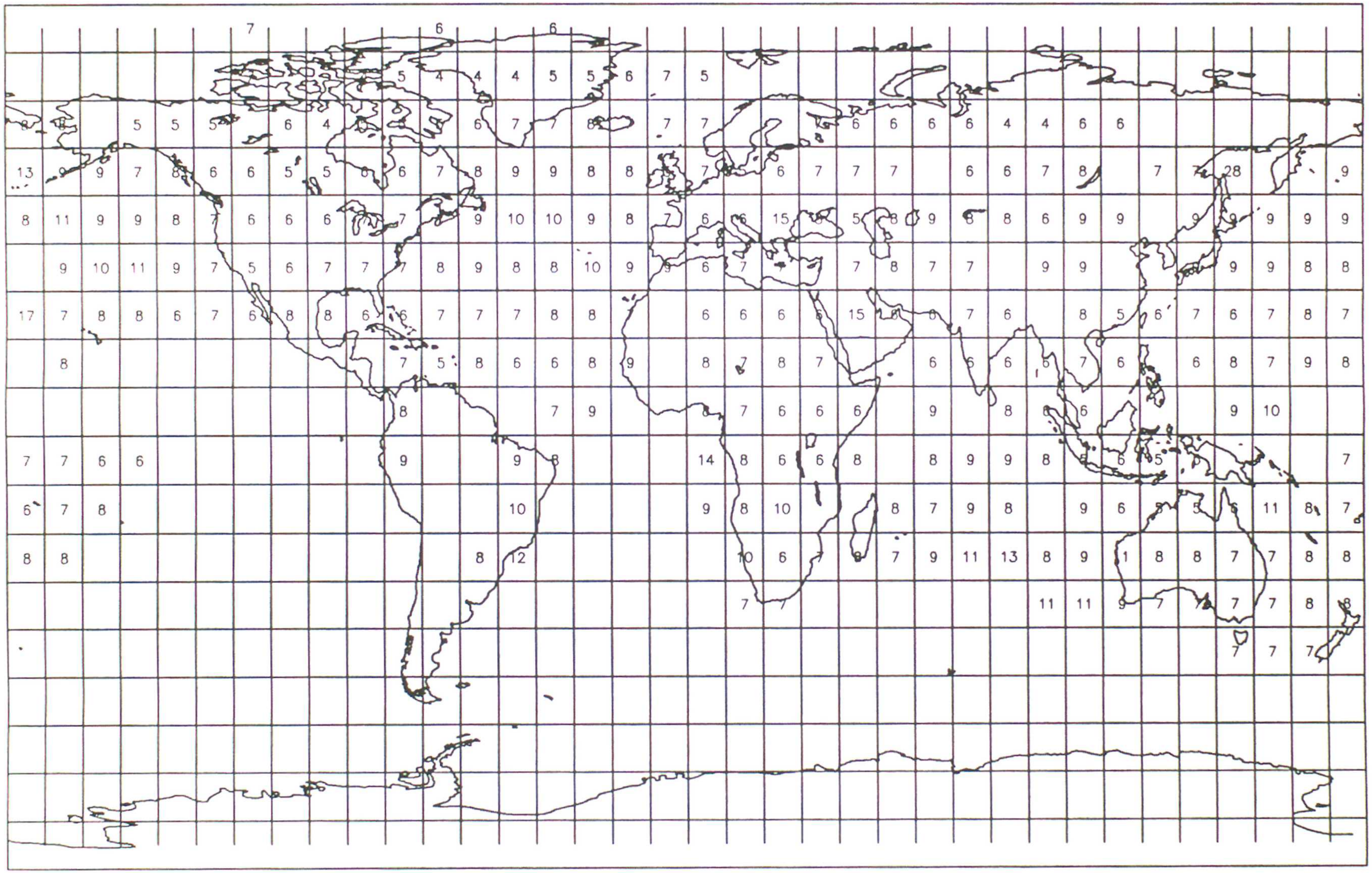

7 6 6
5 4 4 4 5 5 6 7 5
8 8 5 5 5 6 4 6 6 7 7 8 7 7 6 6 6 6 4 4 6 6
13 9 9 7 8 6 6 5 5 6 6 7 8 9 9 8 8 7 6 7 7 7 6 6 7 8 7 7 28 9
8 11 9 9 8 7 6 6 6 7 9 10 10 9 8 7 6 6 15 6 5 8 9 6 8 6 9 9 9 9 9 9 9
9 10 11 9 7 5 6 7 7 7 8 9 8 8 10 9 9 6 7 7 8 7 7 9 9 9 9 8 8
17 7 8 8 6 7 6 8 8 6 6 7 7 7 8 8 6 6 6 6 15 6 6 7 6 8 5 6 7 6 7 8 7
8 7 5 8 6 6 8 9 8 7 8 7 6 6 6 6 7 6 6 8 7 9 8
8 7 9 8 7 6 6 6 9 8 8 6 9 10
7 7 6 6 9 9 8 14 8 6 6 8 8 9 9 8 6 5 7
6 7 8 10 9 8 10 8 7 9 8 9 6 5 5 6 11 8 7
8 8 8 12 10 6 7 8 7 9 11 13 8 9 1 8 8 7 7 8 8
7 7 11 11 9 7 7 7 7 8 8
7 7 7

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown duringperiod.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
37018	00	Z	250	44/ 39	24	0	26.3	76.4	80.8	5
42027	00	Z	100	34/ 75	14	0	95.5	-96.2	135.5	6
42101	00	Z	700	30/ 76	19	0	20.3	-38.7	43.7	5
42339	12	Z	200	26/ 73	21	0	57.9	72.9	93.1	4
42361	12	Z	70	26/ 78	14	0	141.2	71.9	158.4	8
42369	00	Z	50	27/ 81	11	0	129.4	109.6	169.6	5
42369	12	Z	200	27/ 81	16	1	99.5	50.5	111.6	10
42379	00	Z	30	27/ 83	16	8	106.0	283.7	302.9	10
42379	12	Z	70	27/ 83	19	1	156.5	176.2	235.7	10
42492	00	Z	70	26/ 85	22	1	126.0	120.5	174.4	7
42492	12	Z	70	26/ 85	14	1	124.8	37.4	130.3	4
42647	00	Z	200	23/ 73	17	0	71.8	-32.9	79.0	4
42667	00	Z	150	23/ 77	29	0	81.5	-37.9	89.9	6
42724	00	Z	30	24/ 91	11	0	93.0	225.8	244.2	4
42809	00	Z	100	23/ 88	18	0	116.6	-26.8	119.6	4
42867	00	Z	50	21/ 79	16	0	157.2	89.8	181.0	6
42867	12	Z	30	21/ 79	13	0	154.1	174.5	232.8	10
42971	00	Z	250	20/ 86	23	0	61.2	-53.7	81.4	8
42971	12	Z	250	20/ 86	23	0	41.9	-54.7	68.9	4
43003	12	Z	150	19/ 73	19	0	46.8	127.5	135.8	6
43014	00	Z	400	20/ 75	29	0	43.8	-46.0	63.5	5
43014	12	Z	100	20/ 75	13	0	123.6	36.6	129.0	6
43041	00	Z	250	19/ 82	15	0	67.4	-69.7	96.9	10
43128	00	Z	200	17/ 78	26	0	81.5	-75.8	111.3	6
43150	12	Z	100	18/ 83	21	0	135.5	17.2	136.6	8
43185	12	Z	70	16/ 81	21	1	100.1	134.2	167.5	6
43192	12	Z	150	15/ 74	15	1	105.6	71.5	127.5	5
43279	12	Z	150	13/ 80	27	0	94.2	30.9	99.1	5
43285	00	Z	50	13/ 75	17	0	93.0	-165.6	190.0	9
43295	00	Z	100	13/ 78	18	0	82.5	141.7	164.0	5
43295	12	Z	70	13/ 78	11	0	99.0	175.1	201.1	8
43346	12	Z	30	11/ 80	14	1	89.1	183.4	203.8	5
43353	00	Z	100	10/ 76	12	0	77.4	-135.7	156.2	6
43369	00	Z	50	8/ 73	9	2	97.1	-184.2	208.2	9
43369	12	Z	250	8/ 73	22	0	57.1	-57.6	81.1	9
43371	00	Z	50	8/ 77	18	0	69.9	-273.9	282.7	8
43371	12	Z	50	8/ 77	20	0	144.8	-53.8	154.5	4
44212	12	Z	200	50/ 92	23	0	54.5	74.5	92.3	4
47058	00	Z	150	39/ 126	10	0	118.4	51.3	129.0	4
50527	00	Z	30	49/ 120	27	0	88.6	179.8	200.4	5
52323	12	Z	30	42/ 97	26	0	69.7	165.1	179.2	4
52836	00	Z	70	36/ 98	30	0	64.5	117.6	134.1	5
53772	00	Z	150	38/ 113	27	0	34.8	92.0	98.4	4
54337	00	Z	50	41/ 121	23	0	135.3	60.6	148.2	8
54342	12	Z	70	42/ 123	23	0	87.6	99.5	132.6	7
54497	00	Z	30	40/ 124	11	0	57.2	184.4	193.0	8
54497	12	Z	30	40/ 124	12	0	80.2	148.8	169.1	4
57679	00	Z	100	28/ 113	27	0	36.0	129.3	134.2	4
57749	00	Z	100	28/ 110	28	0	34.3	121.5	126.2	4
57972	00	Z	100	26/ 113	30	1	36.4	133.9	138.8	4
58238	00	Z	150	32/ 119	28	0	33.3	94.9	100.6	6
62414	00	Z	50	24/ 33	22	2	145.4	167.5	221.8	5
62414	12	Z	30	24/ 33	16	6	71.8	199.2	211.7	7
63450	12	Z	700	9/ 39	22	4	15.0	71.1	72.6	7
89009	00	Z	250	-90/ 0	12	1	107.6	27.4	111.0	6
89022	12	Z	250	-75/ -27	5	19	71.9	-162.2	177.4	8
91557	12	Z	700	-18/ 168	23	1	18.3	-82.7	84.7	7
96237	00	Z	200	-2/ 106	18	0	33.5	-115.2	120.0	7
97560	12	Z	50	-1/ 136	16	0	54.9	-161.4	170.5	8

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – MAY 1997

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1350

FIGURE 8

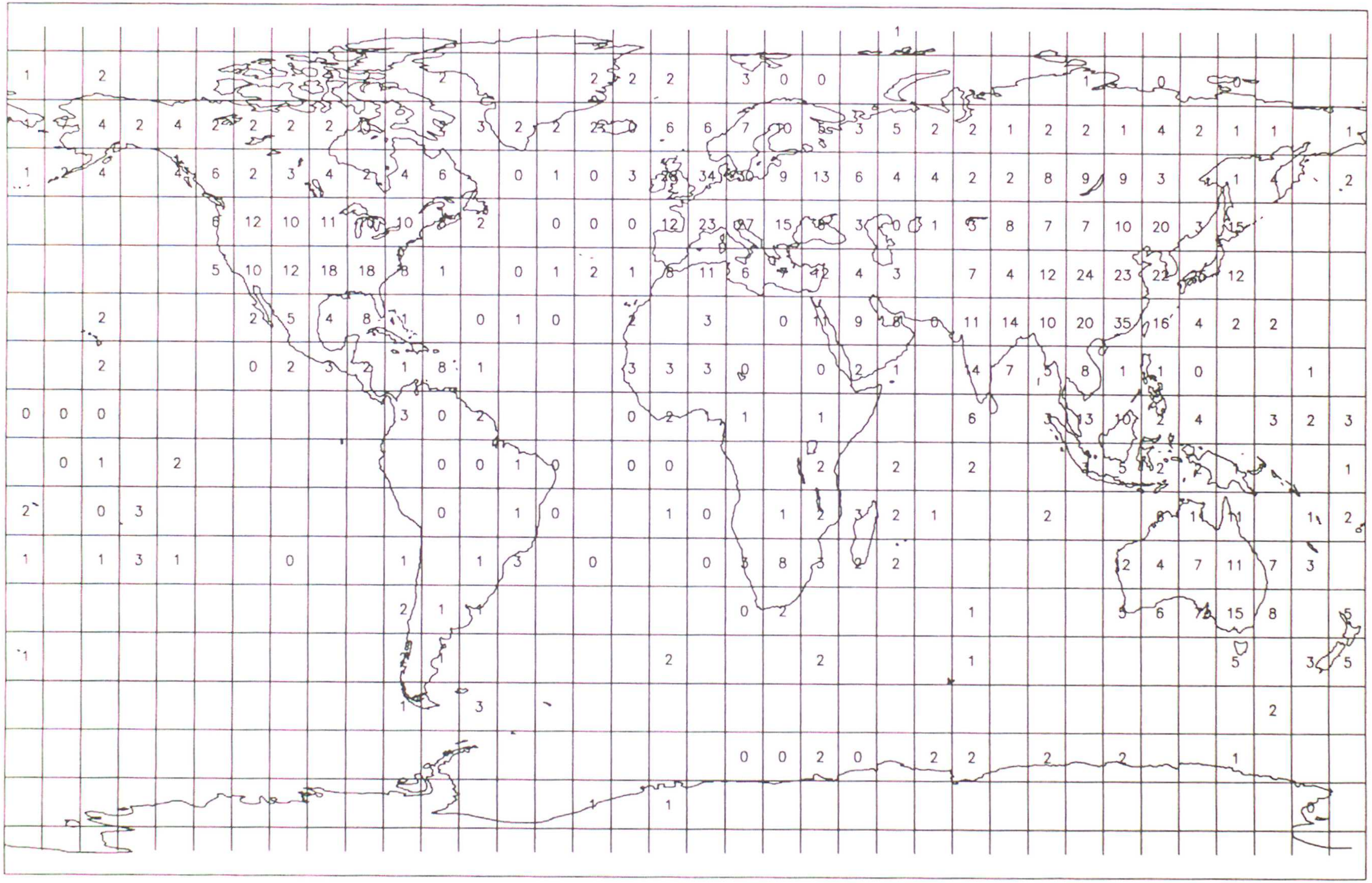

1
1 2 2 2 2 2 3 0 0 1 0 0
4 2 4 2 2 2 2 3 2 2 2 6 6 7 0 3 5 2 2 1 2 2 1 4 2 1 1 1
1 4 4 6 2 3 4 2 4 6 0 1 0 3 28 34 30 9 13 6 4 4 2 2 8 9 9 3 1 1 2
6 12 10 11 10 10 2 0 0 0 12 23 27 15 8 3 0 1 3 8 7 7 10 20 3 15
5 10 12 18 18 8 1 0 1 2 1 8 11 6 7 42 4 3 7 4 12 24 23 22 20 12
2 2 5 4 8 1 0 1 0 2 3 0 11 9 8 0 11 14 10 20 35 16 4 2 2
2 0 2 3 2 1 8 1 3 3 3 0 0 2 1 4 7 5 8 1 1 0 1
0 0 0 3 0 2 0 2 1 1 6 3 13 10 2 4 3 2 3
0 1 2 0 0 1 0 0 0 2 2 2 3 5 2 1
2 0 3 0 1 0 1 0 1 2 3 2 1 2 8 1 1 1 2
1 1 3 1 0 1 1 3 0 0 3 8 3 2 2 2 4 7 11 7 3
2 1 1 0 2 1 5 6 7 15 8 5
1 2 2 1 5 3 5
1 3 2
0 0 2 0 2 2 2 2 1
1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
43014	00	V	150	20/ 75	13	0	23	9.4	3.9	18.3	1
54497	00	V	200	40/ 124	25	0	24	13.4	-2.4	22.1	4
54497	12	V	200	40/ 124	17	1	16	11.5	0.3	18.1	3
83612	00	V	150	-20/ -55	11	0	9	10.9	1.6	21.7	2

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – MAY 1997

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1212

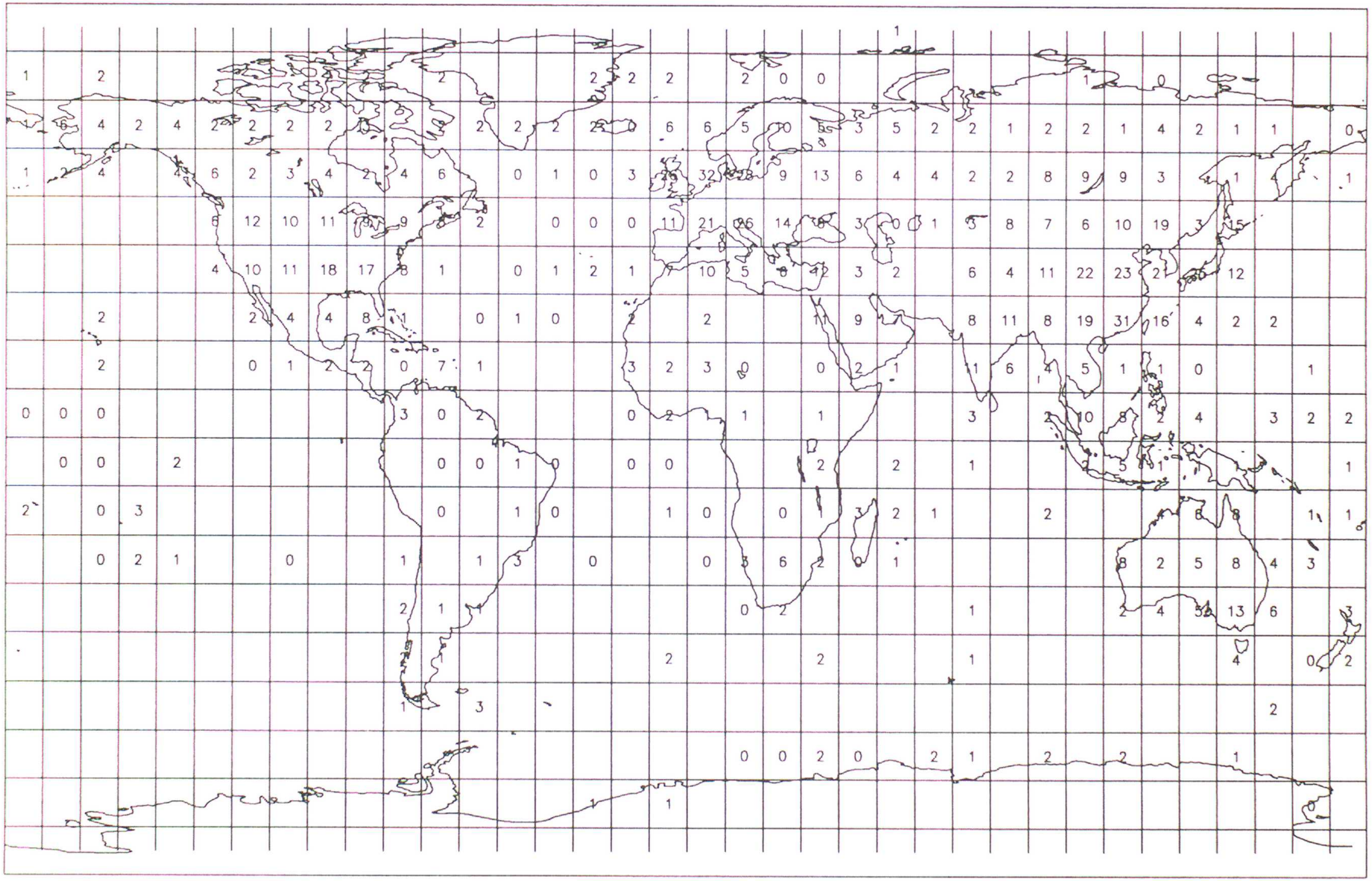

1
1 2 2 2 2 2 2 0 0 1 0
1 6 4 2 4 2 2 2 2 2 2 2 25 6 6 5 10 5 3 5 2 2 1 2 2 1 4 2 1 1 0
1 2 4 4 6 2 3 4 2 4 6 0 1 0 3 26 32 23 9 13 6 4 4 2 2 8 9 9 3 1 4 1
6 12 10 11 8 9 6 2 0 0 0 11 21 26 14 8 3 0 1 3 8 7 6 10 19 3 15
4 10 11 18 17 8 1 0 1 2 1 7 10 5 8 42 3 2 6 4 11 22 23 21 30 12
2 2 4 4 8 1 0 1 0 2 2 11 9 8 11 8 19 31 16 4 2 2
2 0 1 2 2 0 7 1 3 2 3 0 0 2 1 11 6 4 5 1 1 0 1
0 0 0 3 0 2 0 2 1 1 3 2 10 8 2 4 3 2 2
0 0 2 0 0 1 0 0 0 2 2 1 2 5 1 1
2 0 3 0 1 0 1 0 0 1 3 2 1 2 6 8 1 1
0 2 1 0 1 1 3 0 0 3 6 2 0 1 8 2 5 8 4 3
2 1 1 0 2 1 2 4 52 13 6 3
1 2 2 1 4 0 2
1 3 2
0 0 2 0 2 1 2 2 1
1 1 0

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
16144	12	DD	45/ 12	24	18.3	3.6	21.6
40265	00	DD	32/ 36	24	-24.2	4.4	29.1
42339	12	DD	26/ 73	20	15.7	8.8	17.0
42369	00	DD	27/ 81	10	11.4	5.3	14.7
43346	12	DD	11/ 80	13	15.6	6.7	26.9
48327	00	DD	19/ 99	20	10.1	5.6	24.1
48820	00	DD	21/ 106	18	10.8	9.4	23.5
58362	12	DD	31/ 121	30	-10.3	3.0	9.2
59134	00	DD	24/ 118	29	11.9	6.2	13.4
59134	12	DD	24/ 118	28	10.4	1.6	11.5
59280	00	DD	24/ 113	28	11.3	4.3	15.5
60571	00	DD	32/ -2	15	17.6	7.0	17.4
67083	00	DD	-19/ 47	23	17.0	3.0	10.2
67083	12	DD	-19/ 47	20	16.8	9.8	15.2
72476	00	DD	39/-109	29	-12.1	6.9	15.1
72476	12	DD	39/-109	29	-14.0	1.7	9.6
76256	12	DD	28/-111	20	-17.7	7.7	27.9
76692	12	DD	19/ -96	21	-16.8	7.2	25.6

MONITORING OF SATELLITE WINDS

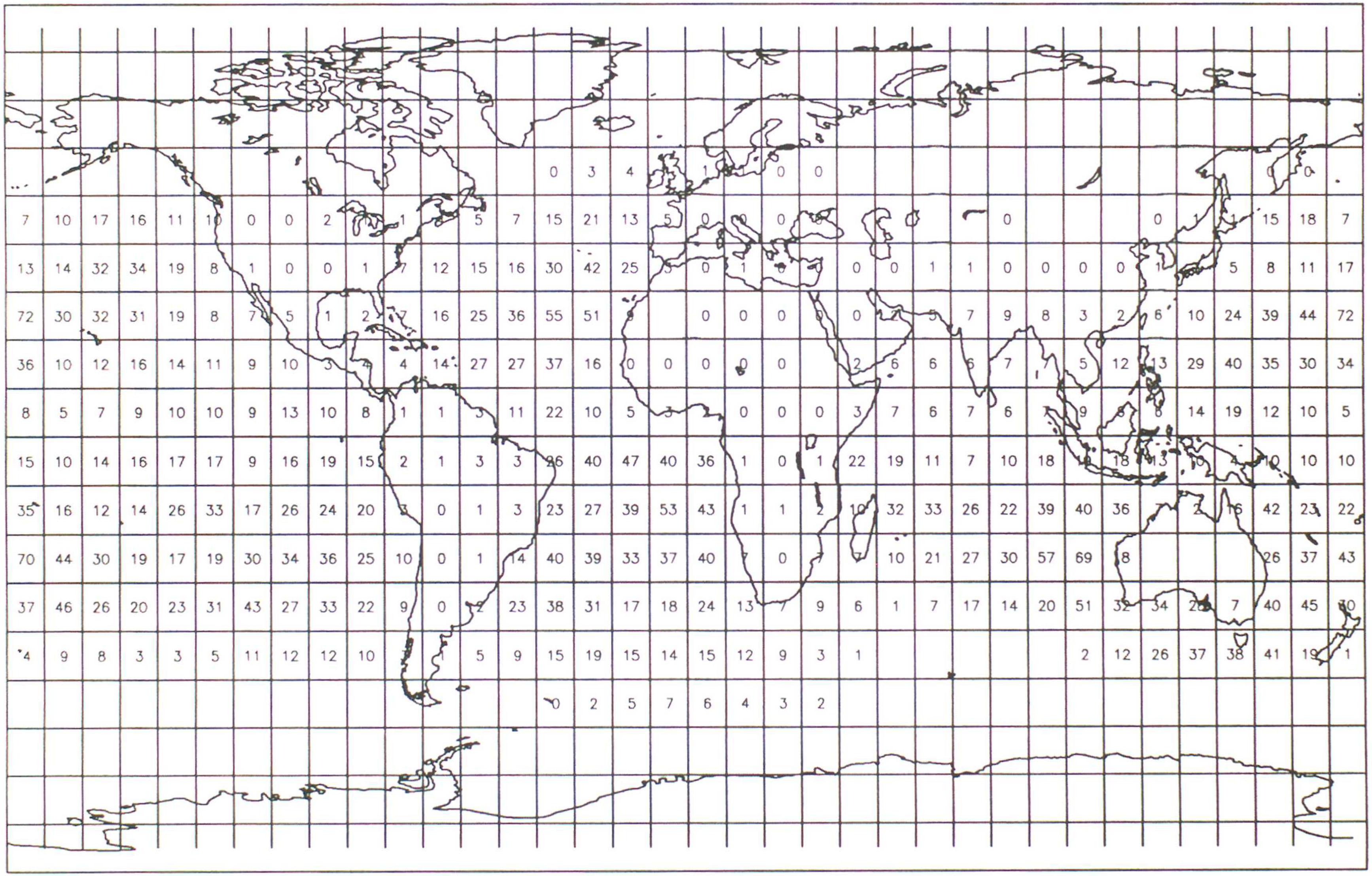
MONITORING CENTRE: BRACKNELL

MONTH: May, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES, METEOSAT, GMS, INSAT.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
MAY 1997


0 3 4 1 0 0 0 0
7 10 17 16 11 10 0 0 2 1 5 7 15 21 13 5 0 0 0 0 0 0 1 1 15 18 7
13 14 32 34 19 8 1 0 0 1 7 12 15 16 30 42 25 5 0 1 0 0 0 0 1 1 0 0 0 0 1 5 8 11 17
72 30 32 31 19 8 7 5 1 2 7 16 25 36 55 51 9 0 0 0 0 0 2 5 7 9 8 3 2 6 10 24 39 44 72
36 10 12 16 14 11 9 10 3 4 4 14 27 27 37 16 0 0 0 0 0 2 6 6 6 7 7 5 12 13 29 40 35 30 34
8 5 7 9 10 10 9 13 10 8 1 1 3 11 22 10 5 3 2 0 0 0 3 7 6 7 6 7 9 8 8 14 19 12 10 5
15 10 14 16 17 17 9 16 19 15 2 1 3 3 26 40 47 40 36 1 0 1 22 19 11 7 10 18 10 18 13 10 4 10 10 10
35 16 12 14 26 33 17 26 24 20 3 0 1 3 23 27 39 53 43 1 1 2 10 32 33 26 22 39 40 36 7 2 16 42 23 22
70 44 30 19 17 19 30 34 36 25 10 0 1 14 40 39 33 37 40 7 0 7 7 10 21 27 30 57 69 8 26 37 43
37 46 26 20 23 31 43 27 33 22 9 0 2 23 38 31 17 18 24 13 7 9 6 1 7 17 14 20 51 32 34 28 7 40 45 30
4 9 8 3 3 5 11 12 12 10 1 1 5 9 15 19 15 14 15 12 9 3 1 2 12 26 37 38 41 19 1
0 2 5 7 6 4 3 2

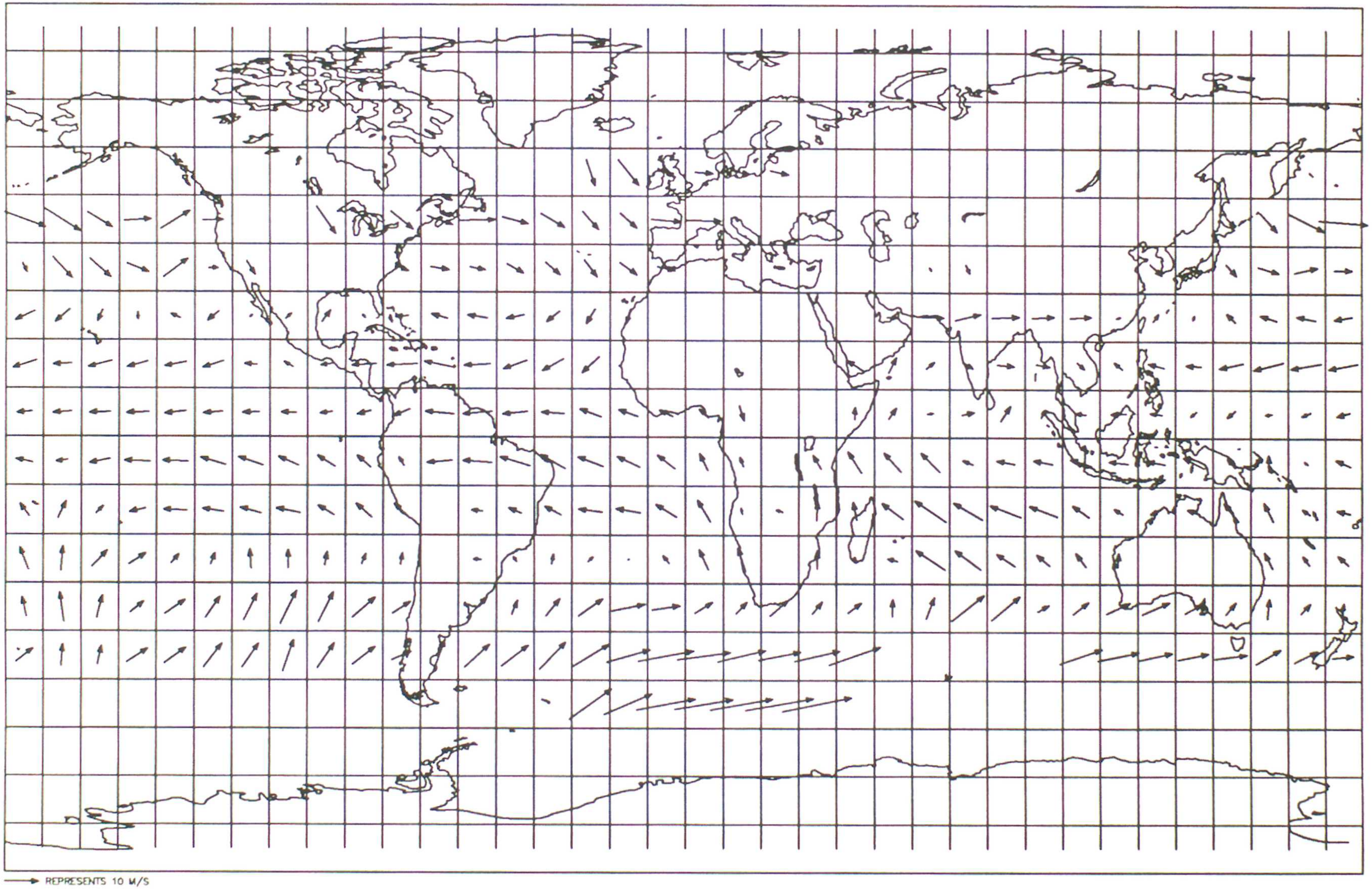
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA

MAY 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11


REPRESENTS 10 M/S

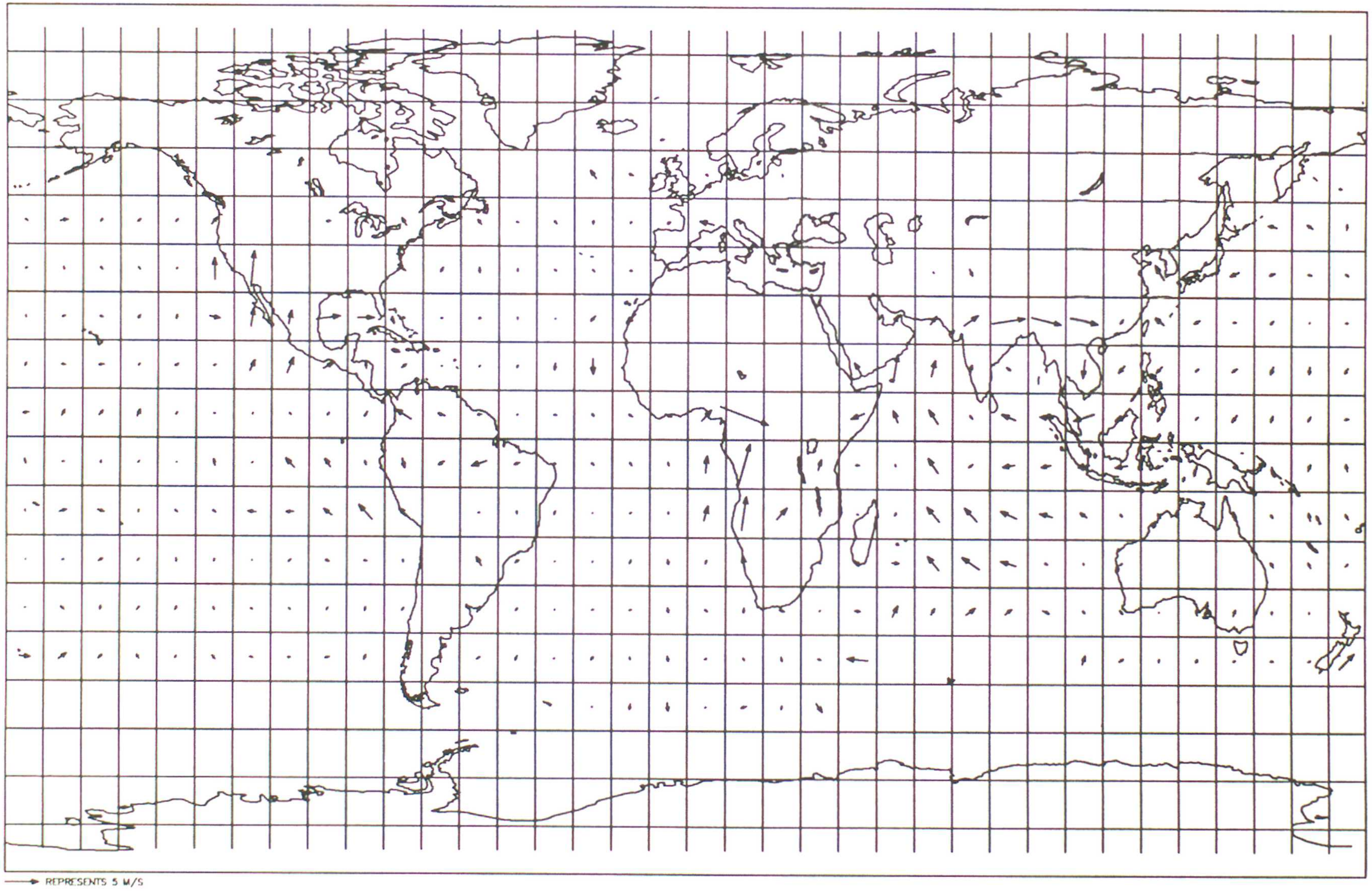
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA

FIGURE 12

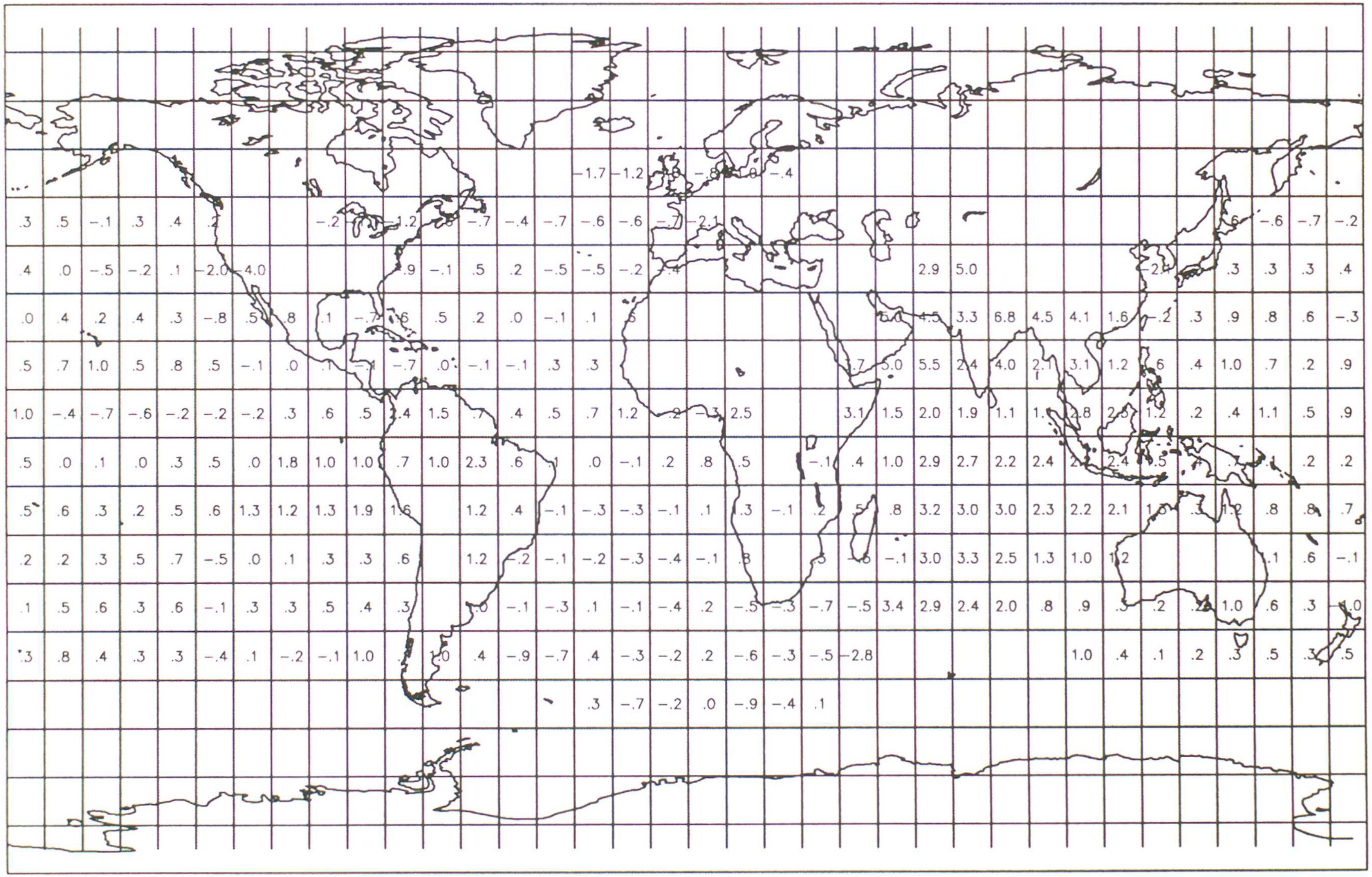
MAY 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

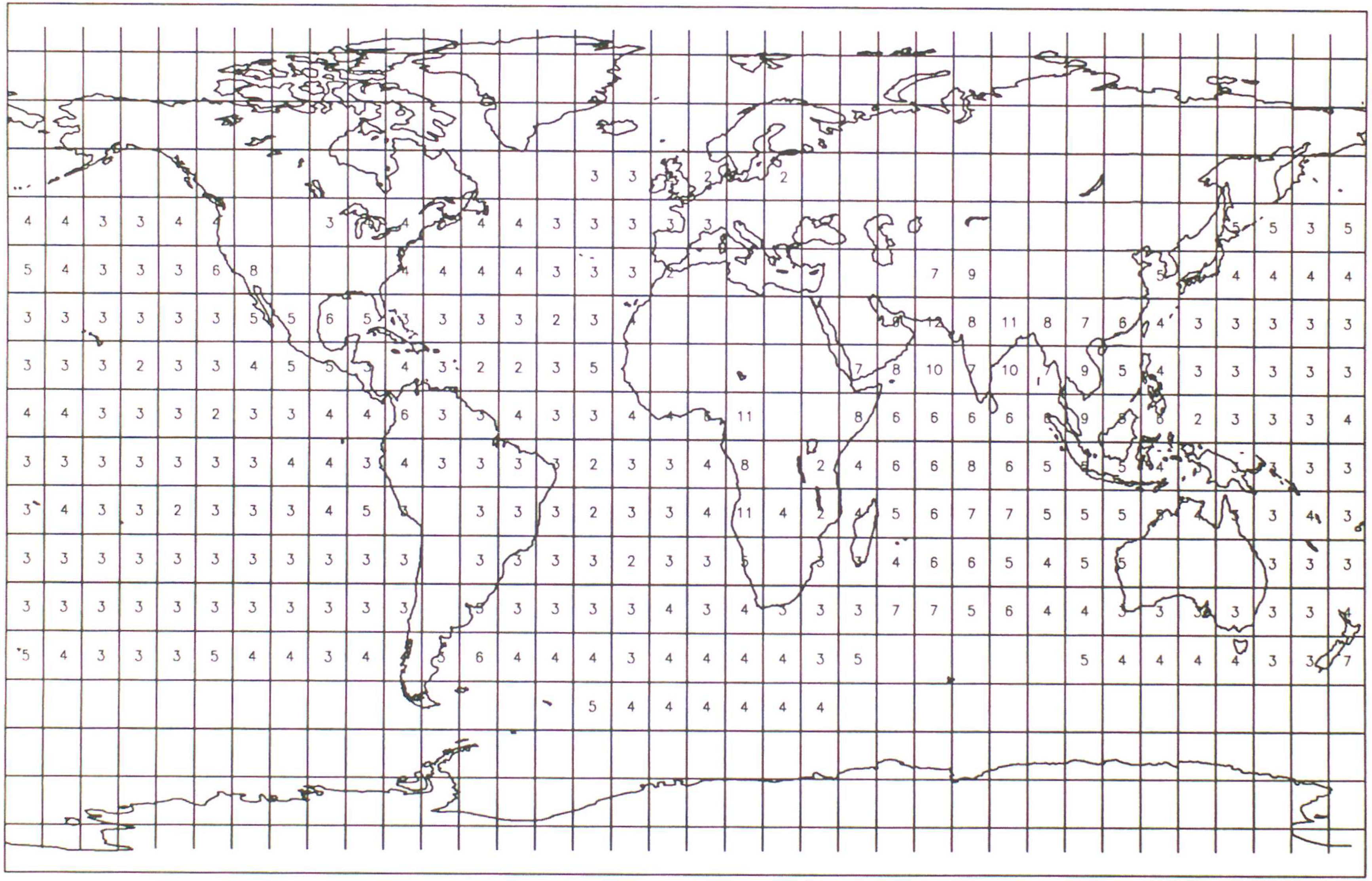

REPRESENTS 5 M/S

SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
MAY 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

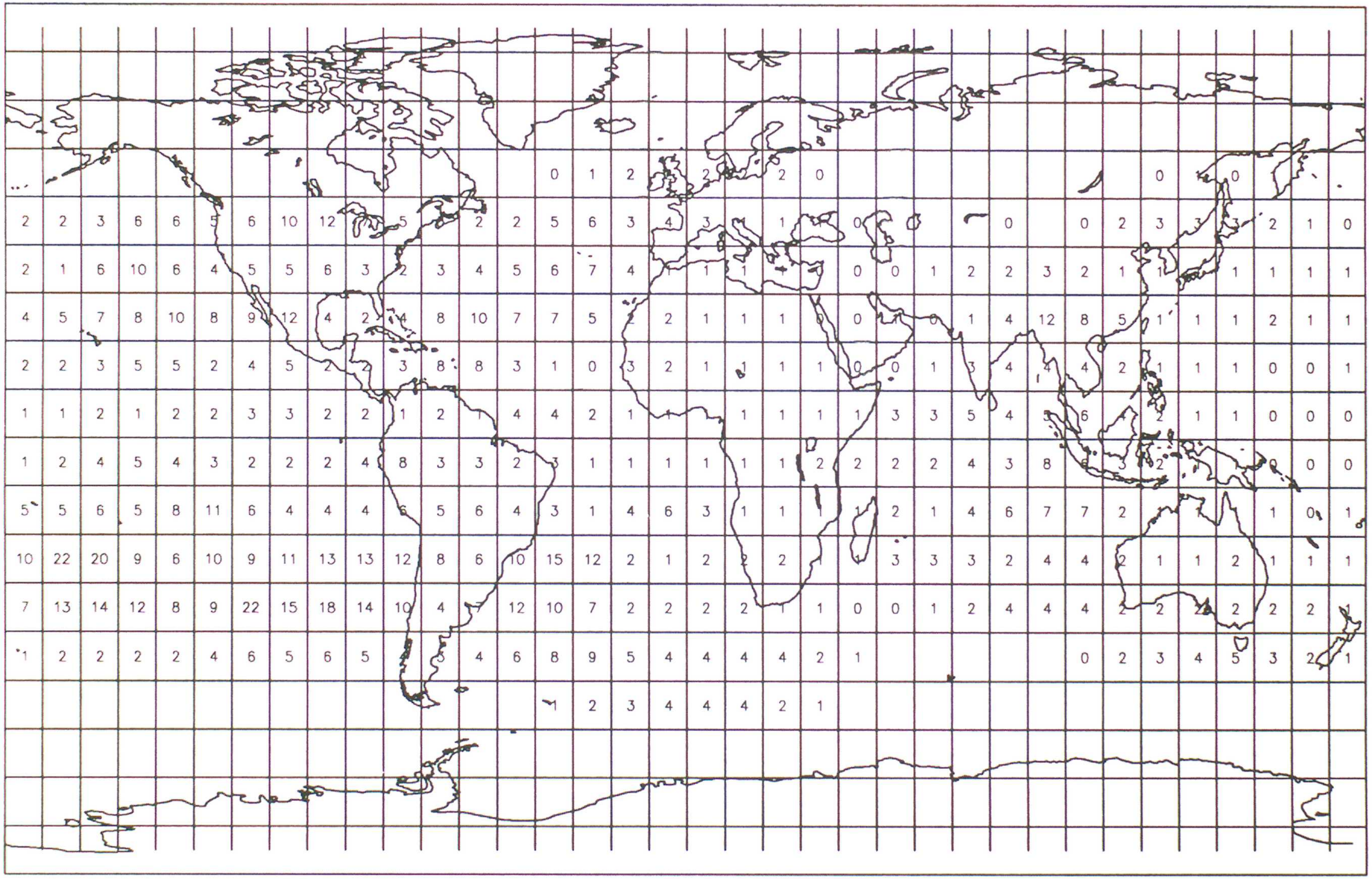


−1.7 −1.2 −.8 −.4
.3 .5 −.1 .3 .4 .2 −.2 −1.2 −.7 −.4 −.7 −.6 −.6 −.7 −2.1 .6 −.6 −.7 −.2
.4 .0 −.5 −.2 .1 −2.0 −4.0 .9 −.1 .5 .2 −.5 −.5 −.2 −.4 2.9 5.0 −2.4 .3 .3 .3 .4
.0 .4 .2 .4 .3 −.8 .5 .8 .1 −.7 .6 .5 .2 .0 −.1 .1 .6 5.0 4.5 3.3 6.8 4.5 4.1 1.6 −.2 .3 .9 .8 .6 −.3
.5 .7 1.0 .5 .8 .5 −.1 .0 .1 −.1 −.7 .0 −.1 −.1 .3 .3 .7 5.0 5.5 2.4 4.0 2.1 3.1 1.2 .6 .4 1.0 .7 .2 .9
1.0 −.4 −.7 −.6 −.2 −.2 −.2 .3 .6 .5 2.4 1.5 .7 .4 .5 .7 1.2 .2 −.3 2.5 3.1 1.5 2.0 1.9 1.1 1.1 2.8 2.5 1.2 .2 .4 1.1 .5 .9
.5 .0 .1 .0 .3 .5 .0 1.8 1.0 1.0 .7 1.0 2.3 .6 .1 .0 −.1 .2 .8 .5 −.1 .4 1.0 2.9 2.7 2.2 2.4 2.4 .5 .1 .2 .2
.5 .6 .3 .2 .5 .6 1.3 1.2 1.3 1.9 1.6 1.2 .4 −.1 −.3 −.3 −.1 .1 .3 −.1 .2 .5 .8 3.2 3.0 3.0 2.3 2.2 2.1 1.3 .3 1.2 .8 .8 .7
.2 .2 .3 .5 .7 −.5 .0 .1 .3 .3 .6 1.2 −.2 −.1 −.2 −.3 −.4 −.1 .8 .5 −.6 −.1 3.0 3.3 2.5 1.3 1.0 1.2 .1 .6 −.1
.1 .5 .6 .3 .6 −.1 .3 .3 .5 .4 .3 .0 −.1 −.3 .1 −.1 −.4 .2 −.5 −.3 −.7 −.5 3.4 2.9 2.4 2.0 .8 .9 .3 .2 .2 1.0 .6 .3 −1.0
.3 .8 .4 .3 .3 −.4 .1 −.2 −.1 1.0 1.0 .4 −.9 −.7 .4 −.3 −.2 .2 −.6 −.3 −.5 −2.8 1.0 .4 .1 .2 .3 .5 .3 .5
.3 −.7 −.2 .0 −.9 −.4 .1

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
MAY 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
MAY 1997


0 1 2 2 2 0 0 0
2 2 3 6 6 5 6 10 12 5 2 2 5 6 3 4 3 1 0 0 0 2 3 3 2 1 0
2 1 6 10 6 4 5 5 6 3 2 3 4 5 6 7 4 1 1 1 0 0 1 2 2 3 2 1 1 1 1 1 1
4 5 7 8 10 8 9 12 4 2 4 8 10 7 7 5 2 2 1 1 1 0 0 0 1 4 12 8 5 1 1 1 2 1 1
2 2 3 5 5 2 4 5 2 2 3 8 8 3 1 0 3 2 1 1 1 1 0 0 1 3 4 4 4 2 1 1 1 0 0 1
1 1 2 1 2 2 3 3 2 2 1 2 1 4 4 2 1 1 1 1 1 1 3 3 5 4 3 6 4 2 1 1 0 0 0
1 2 4 5 4 3 2 2 2 4 8 3 3 2 3 1 1 1 1 1 1 2 2 2 2 4 3 8 6 3 2 0 0 0
5 5 6 5 8 11 6 4 4 4 6 5 6 4 3 1 4 6 3 1 1 1 1 2 1 4 6 7 7 2 1 0 1
10 22 20 9 6 10 9 11 13 13 12 8 6 10 15 12 2 1 2 2 2 1 1 3 3 3 2 4 4 2 1 1 2 1 1 1
7 13 14 12 8 9 22 15 18 14 10 4 7 12 10 7 2 2 2 2 1 1 0 0 1 2 4 4 4 2 2 2 2 2 2 1
1 2 2 2 2 4 6 5 6 5 3 4 6 8 9 5 4 4 4 4 2 1 0 2 3 4 5 3 2 1
1 2 3 4 4 4 2 1

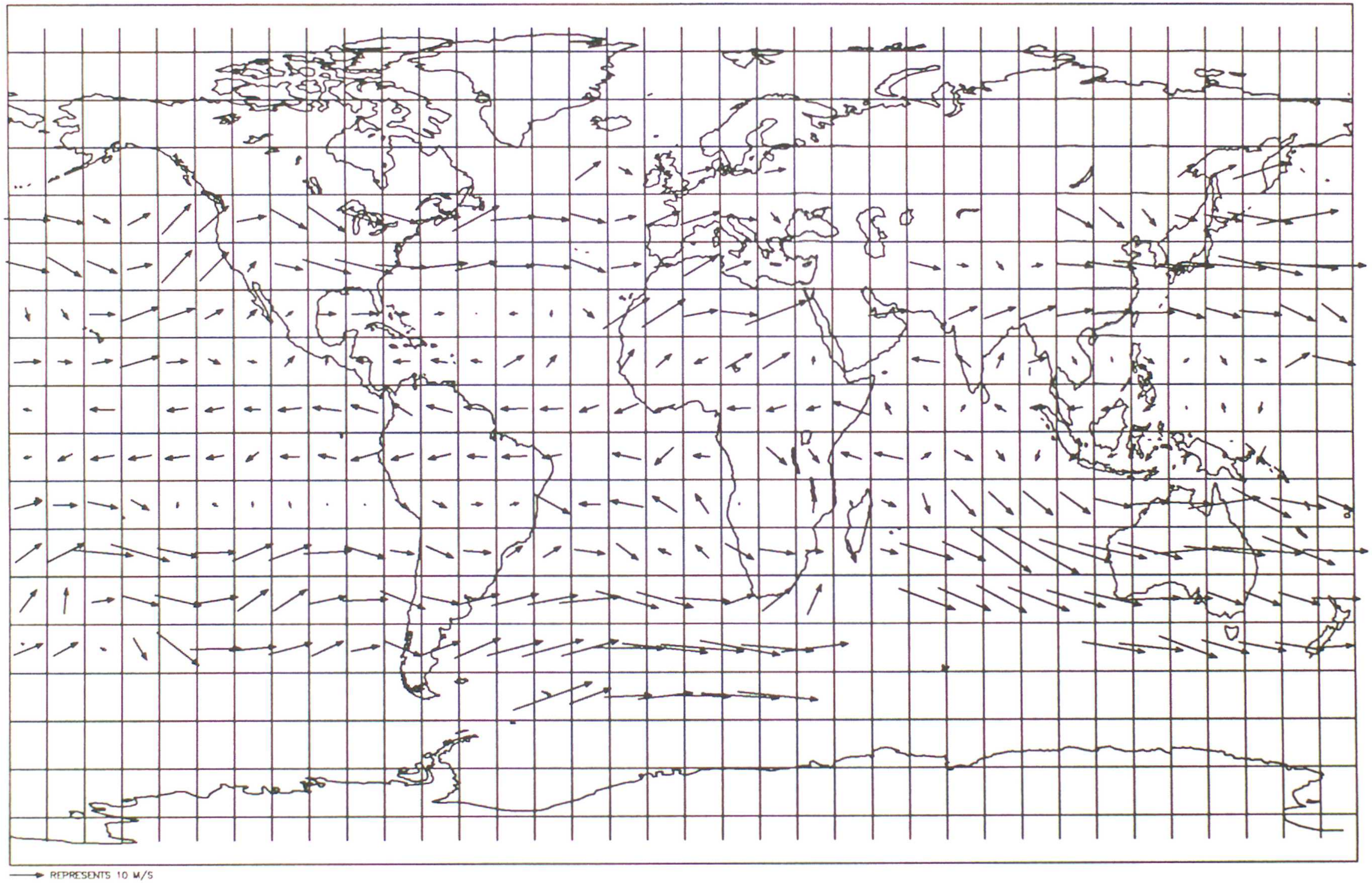
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA

FIGURE 16

MAY 1997

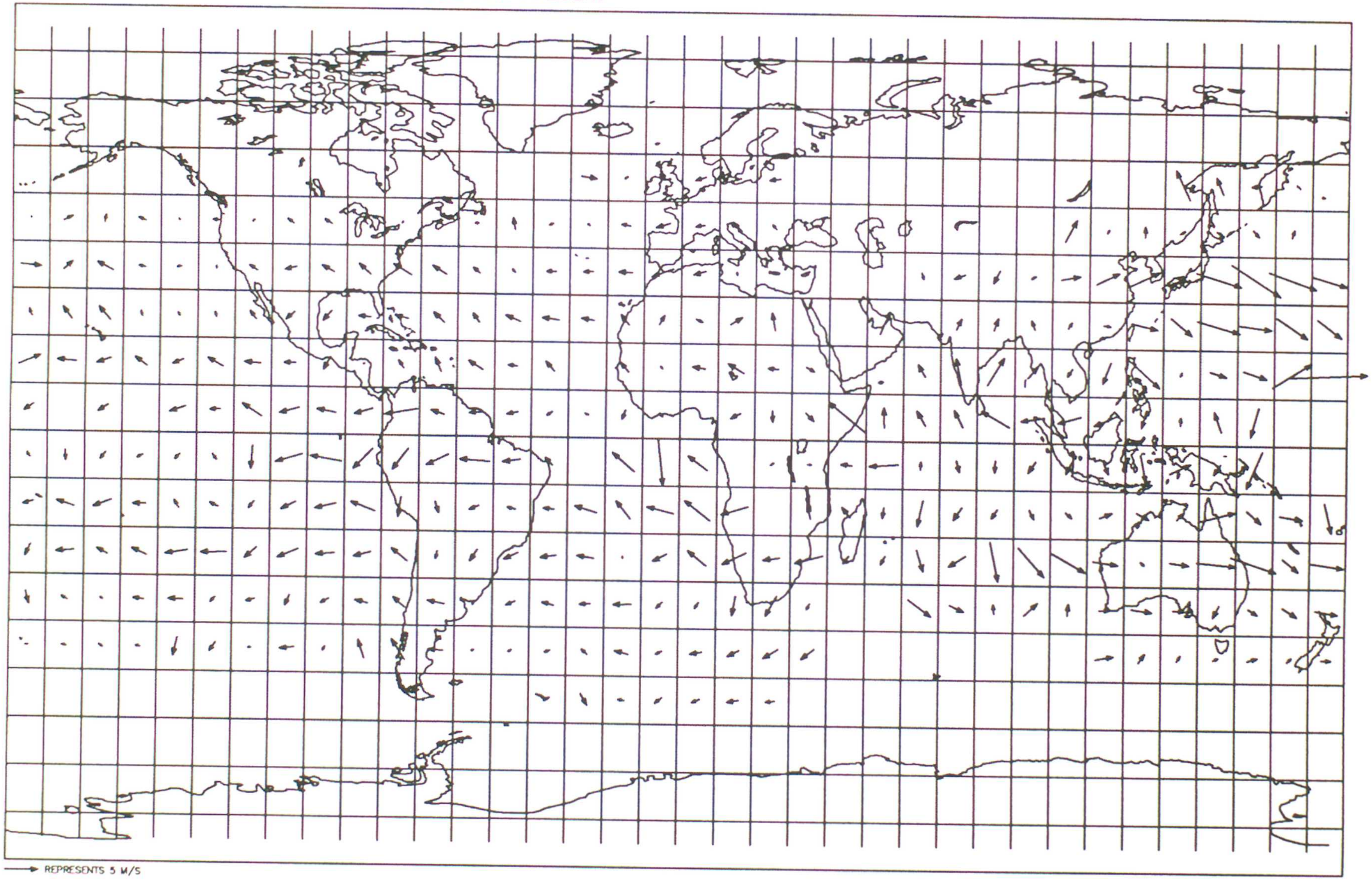
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

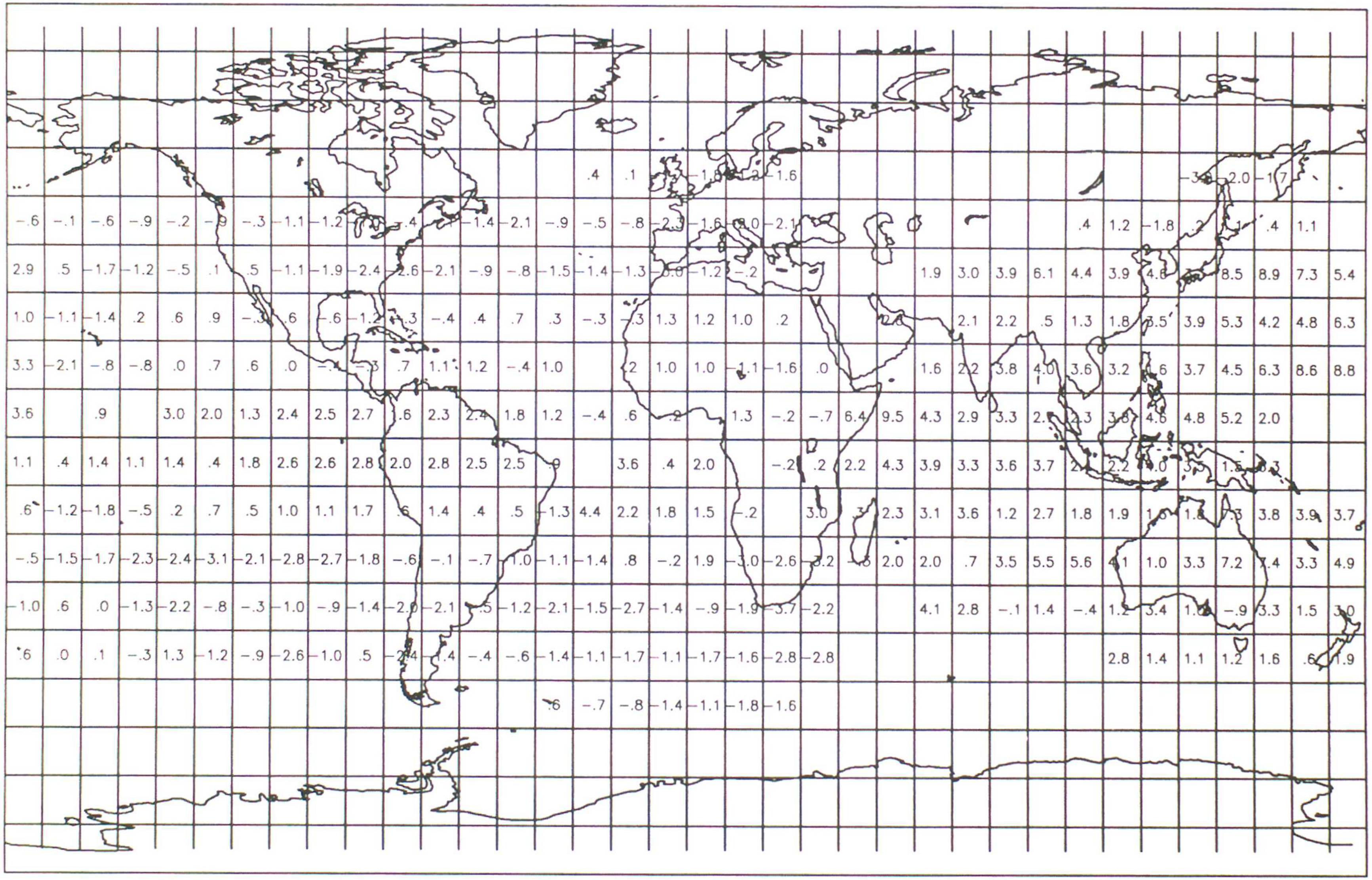

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA
MAY 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 17


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
MAY 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

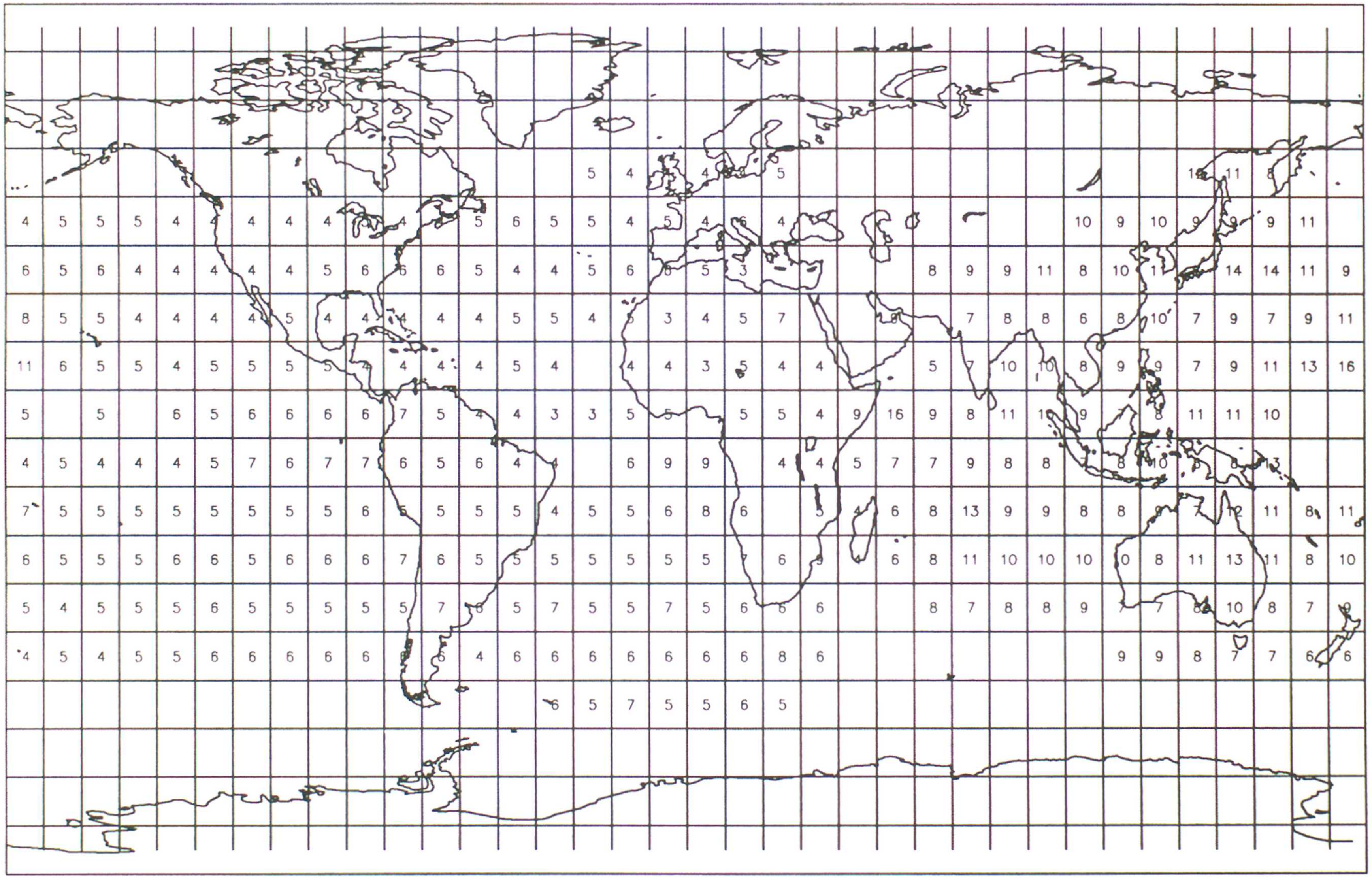

.4 .1 -1.8 -.2 -1.6 -3.8 -2.0 -1.7
-.6 -.1 -.6 -.9 -.2 -.9 -.3 -1.1 -1.2 -.4 -1.4 -2.1 -.9 -.5 -.8 -2.3 -1.6 -2.0 -2.1 .4 1.2 -1.8 .2 .1 .4 1.1
2.9 .5 -1.7 -1.2 -.5 .1 .5 -1.1 -1.9 -2.4 -2.6 -2.1 -.9 -.8 -1.5 -1.4 -1.3 -3.0 -1.2 -.2 1.9 3.0 3.9 6.1 4.4 3.9 4.6 8.5 8.9 7.3 5.4
1.0 -1.1 -1.4 .2 .6 .9 -.3 .6 -.6 -1.2 -.3 -.4 .4 .7 .3 -.3 -.3 1.3 1.2 1.0 .2 2.6 2.1 2.2 .5 1.3 1.8 3.5 3.9 5.3 4.2 4.8 6.3
3.3 -2.1 -.8 -.8 .0 .7 .6 .0 -.4 -.3 .7 1.1 1.2 -.4 1.0 .2 1.0 1.0 -1.1 -1.6 .0 1.6 2.2 3.8 4.0 3.6 3.2 .6 3.7 4.5 6.3 8.6 8.8
3.6 .9 3.0 2.0 1.3 2.4 2.5 2.7 .6 2.3 2.4 1.8 1.2 -.4 .6 .2 1.3 -.2 -.7 6.4 9.5 4.3 2.9 3.3 2.3 3.8 4.6 4.8 5.2 2.0
1.1 .4 1.4 1.1 1.4 .4 1.8 2.6 2.6 2.8 2.0 2.8 2.5 2.5 .9 3.6 .4 2.0 -.2 .2 2.2 4.3 3.9 3.3 3.6 3.7 2.2 4.0 3.5 1.5 3.3
.6 -1.2 -1.8 -.5 .2 .7 .5 1.0 1.1 1.7 .6 1.4 .4 .5 -1.3 4.4 2.2 1.8 1.5 -.2 3.0 .3 2.3 3.1 3.6 1.2 2.7 1.8 1.9 1.6 1.6 7.3 3.8 3.9 3.7
-.5 -1.5 -1.7 -2.3 -2.4 -3.1 -2.1 -2.8 -2.7 -1.8 -.6 -.1 -.7 1.0 -1.1 -1.4 .8 -.2 1.9 -3.0 -2.6 -3.2 -.8 2.0 2.0 .7 3.5 5.5 5.6 4.1 1.0 3.3 7.2 7.4 3.3 4.9
-1.0 .6 .0 -1.3 -2.2 -.8 -.3 -1.0 -.9 -1.4 -2.0 -2.1 .5 -1.2 -2.1 -1.5 -2.7 -1.4 -.9 -1.9 -3.7 -2.2 4.1 2.8 -.1 1.4 -.4 1.2 3.4 1.0 -.9 3.3 1.5 3.0
.6 .0 .1 -.3 1.3 -1.2 -.9 -2.6 -1.0 .5 -2.4 1.4 -.4 -.6 -1.4 -1.1 -1.7 -1.1 -1.7 -1.6 -2.8 -2.8 2.8 1.4 1.1 1.2 1.6 .6 1.9
.6 -.7 -.8 -1.4 -1.1 -1.8 -1.6

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19

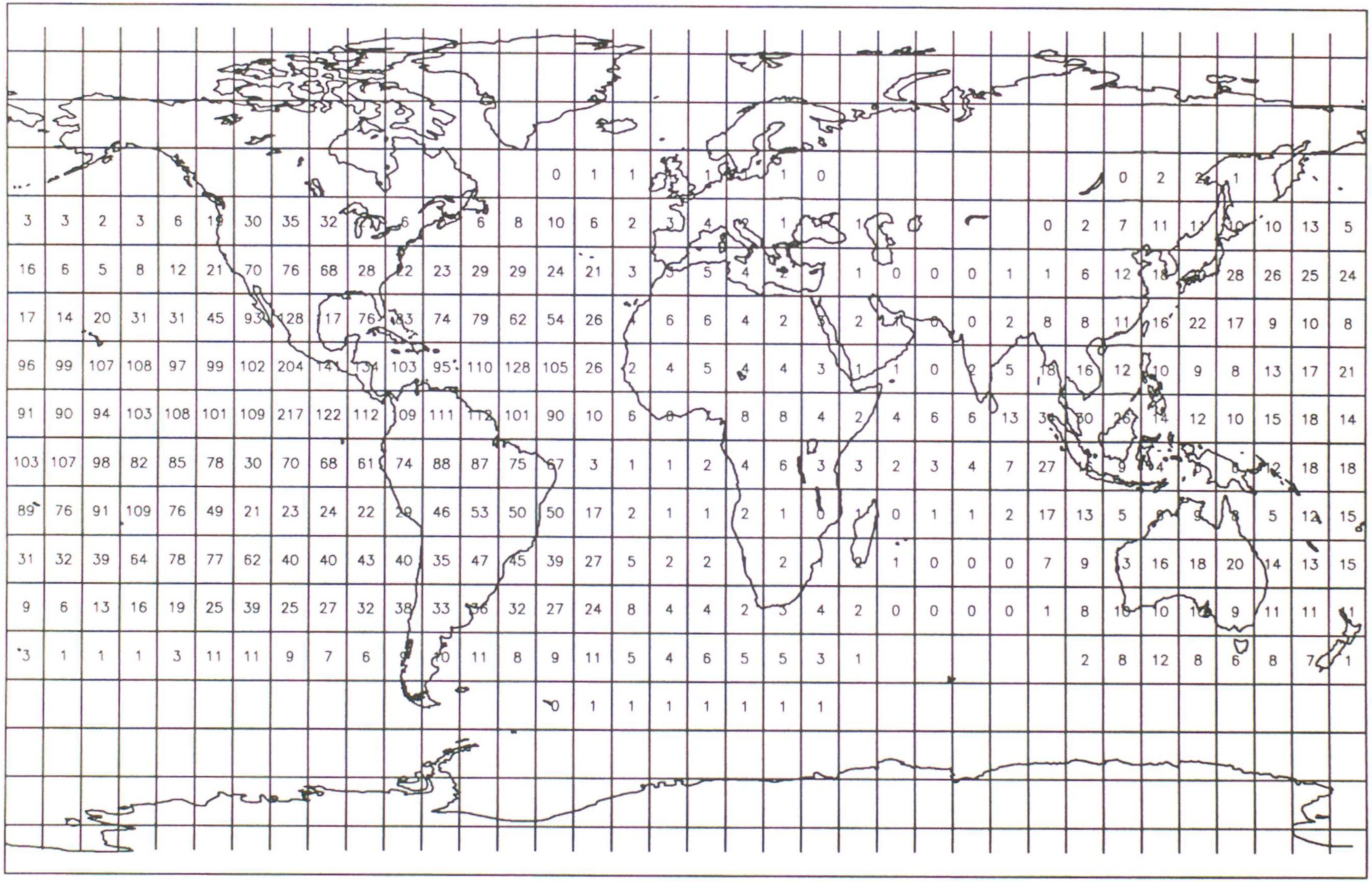
MAY 1997

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 4 4 5 14 11 8
4 5 5 5 4 4 4 4 4 4 5 6 5 5 4 5 4 6 4 10 9 10 9 9 9 11
6 5 6 4 4 4 4 4 5 6 6 6 5 4 4 5 6 6 5 3 8 9 9 11 8 10 1 14 14 11 9
8 5 5 4 4 4 4 5 4 4 4 4 4 5 5 4 5 3 4 5 7 9 7 8 8 6 8 10 7 9 7 9 11
11 6 5 5 4 5 5 5 5 4 4 4 4 5 4 4 4 3 5 4 4 5 7 10 10 8 9 9 7 9 11 13 16
5 5 6 5 6 6 6 6 7 5 4 4 3 3 5 5 5 5 4 9 16 9 8 11 10 9 7 8 11 11 10
4 5 4 4 4 5 7 6 7 7 6 5 6 4 4 6 9 9 4 4 5 7 7 9 8 8 7 8 10 8 3
7 5 5 5 5 5 5 5 5 6 5 5 5 5 4 5 5 6 8 6 5 4 6 8 13 9 9 8 8 9 7 12 11 8 11
6 5 5 5 6 6 5 6 6 6 7 6 5 5 5 5 5 5 5 7 6 9 4 6 8 11 10 10 10 0 8 11 13 11 8 10
5 4 5 5 5 6 5 5 5 5 5 7 6 5 7 5 5 7 5 6 6 6 8 7 8 8 9 7 7 8 10 8 7 9
4 5 4 5 5 6 6 6 6 6 6 6 4 6 6 6 6 6 6 6 8 6 9 9 8 7 7 6 6
6 5 7 5 5 6 5

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
MAY 1997


0 1 1 1 1 1 0 0 2 2 1
3 3 2 3 6 19 30 35 32 6 6 8 10 6 2 3 4 2 1 1 0 2 7 11 11 10 10 13 5
16 6 5 8 12 21 70 76 68 28 22 23 29 29 24 21 3 5 5 4 2 1 0 0 0 1 1 6 12 18 28 26 25 24
17 14 20 31 31 45 93 128 17 76 83 74 79 62 54 26 4 6 6 4 2 3 2 0 0 2 8 8 11 16 22 17 9 10 8
96 99 107 108 97 99 102 204 141 134 103 95 110 128 105 26 2 4 5 4 4 3 1 1 0 2 5 18 16 12 10 9 8 13 17 21
91 90 94 103 108 101 109 217 122 112 109 111 112 101 90 10 6 8 2 8 8 4 2 4 6 6 13 38 30 26 14 12 10 15 18 14
103 107 98 82 85 78 30 70 68 61 74 88 87 75 67 3 1 1 2 4 6 3 3 2 3 4 7 27 15 9 4 5 8 12 18 18
89 76 91 109 76 49 21 23 24 22 29 46 53 50 50 17 2 1 1 2 1 0 1 0 1 1 2 17 13 5 8 9 8 5 12 15
31 32 39 64 78 77 62 40 40 43 40 35 47 45 39 27 5 2 2 2 1 2 1 0 0 0 7 9 3 16 18 20 14 13 15
9 6 13 16 19 25 39 25 27 32 38 33 36 32 27 24 8 4 4 2 3 4 2 0 0 0 0 1 8 10 10 12 9 11 11 11
3 1 1 1 3 11 11 9 7 6 9 10 11 8 9 11 5 4 6 5 5 3 1 2 8 12 8 6 8 7 1
0 1 1 1 1 1 1 1

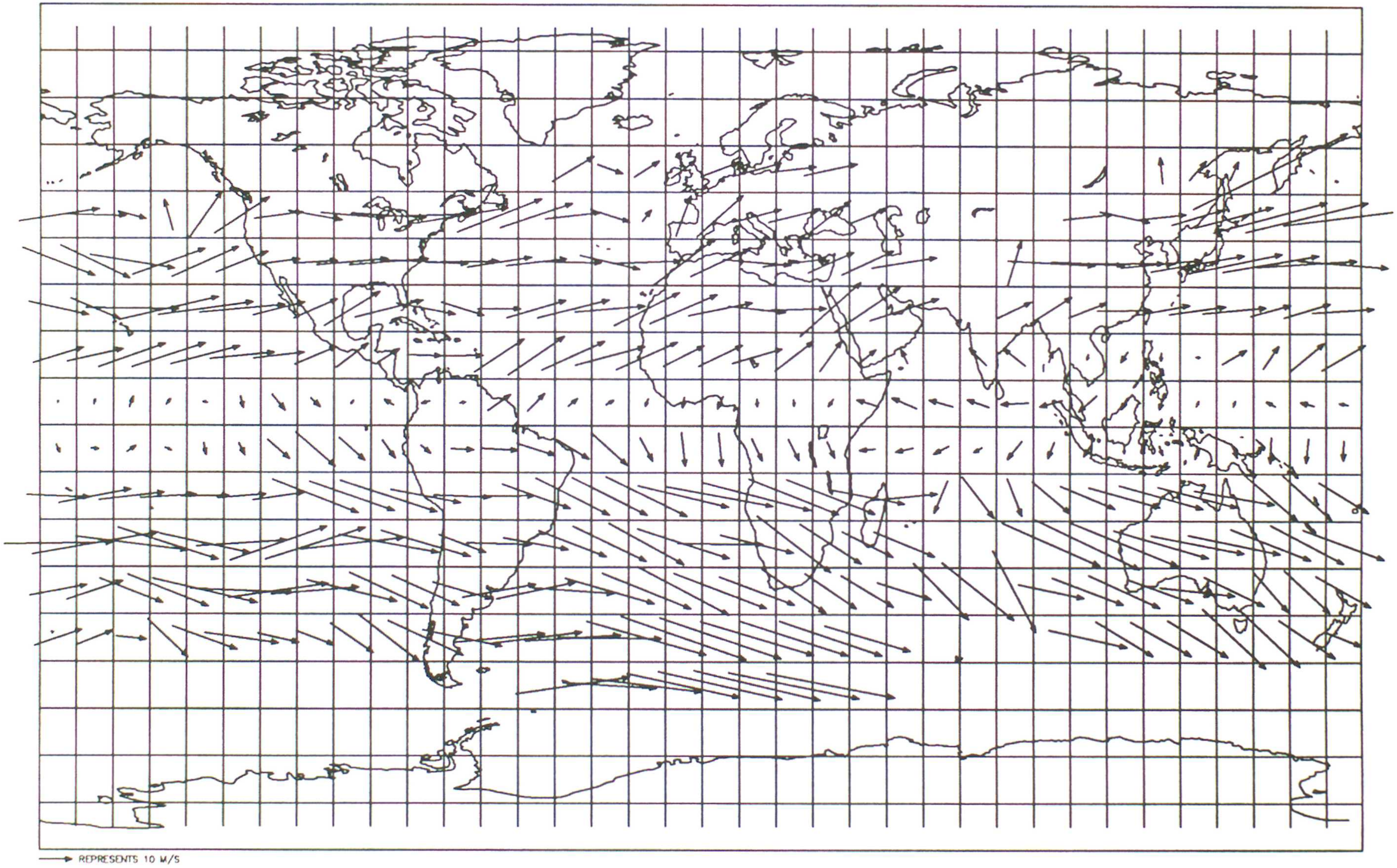
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA

MAY 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

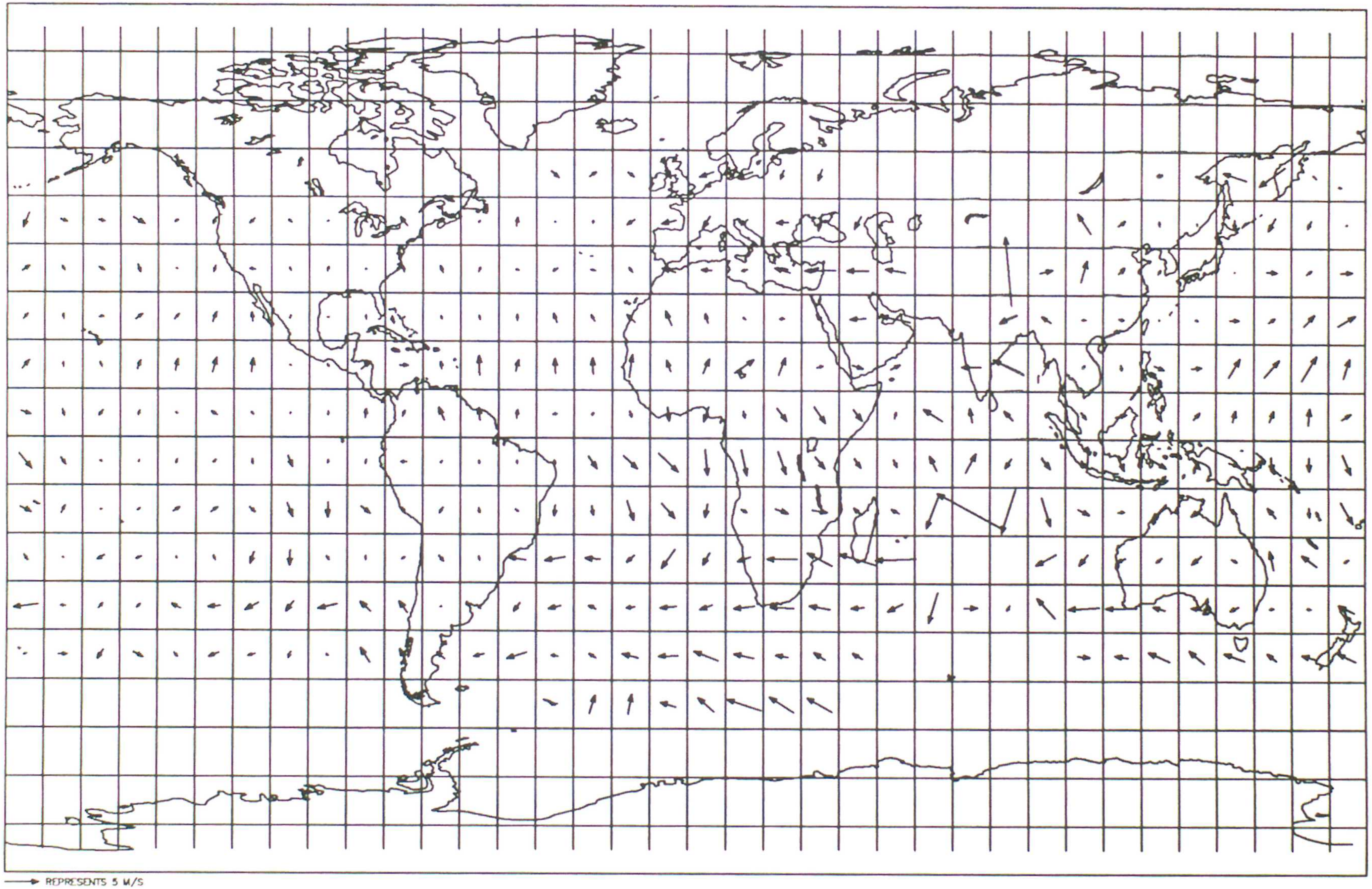
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA

FIGURE 22

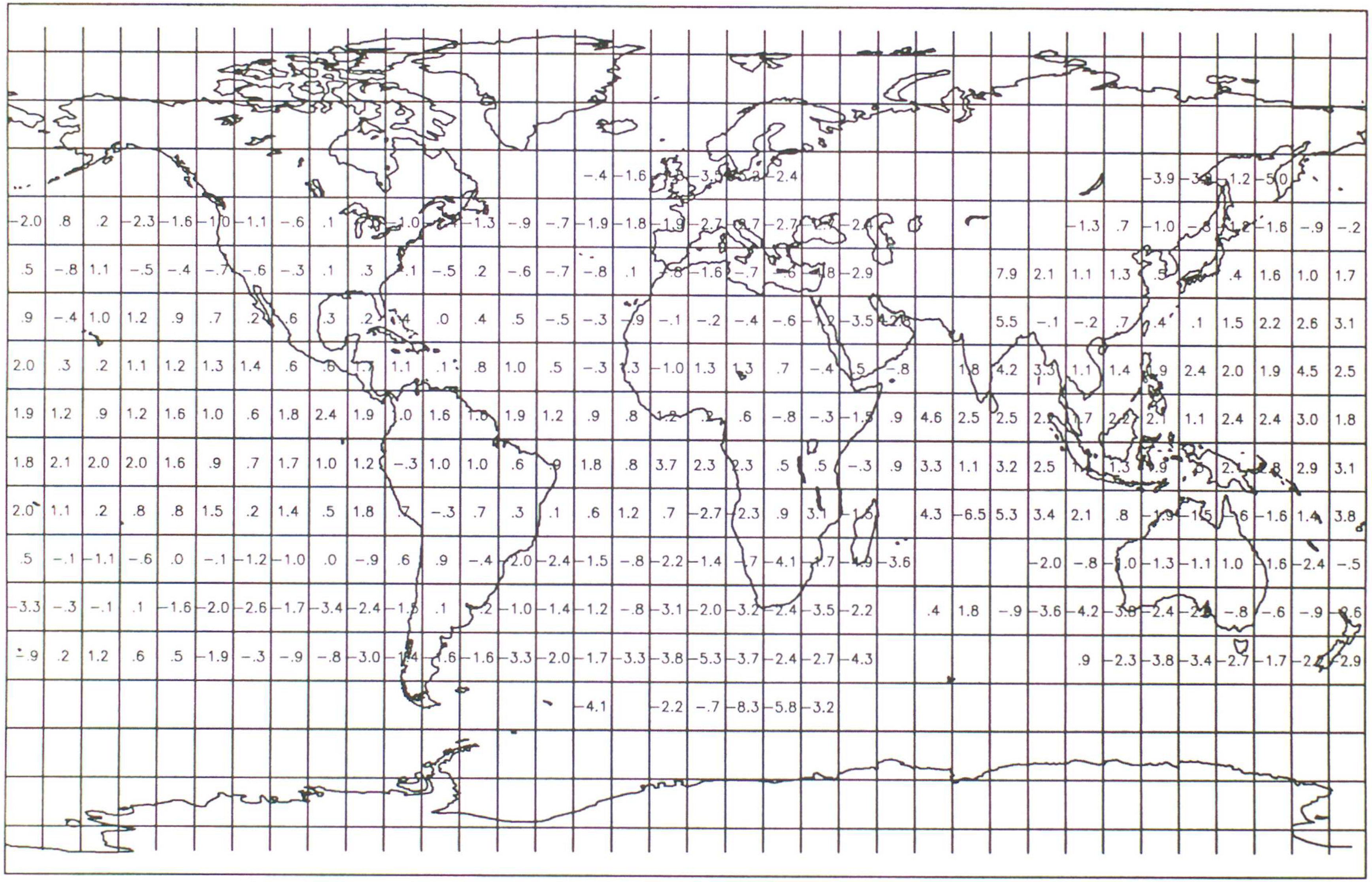
MAY 1997

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

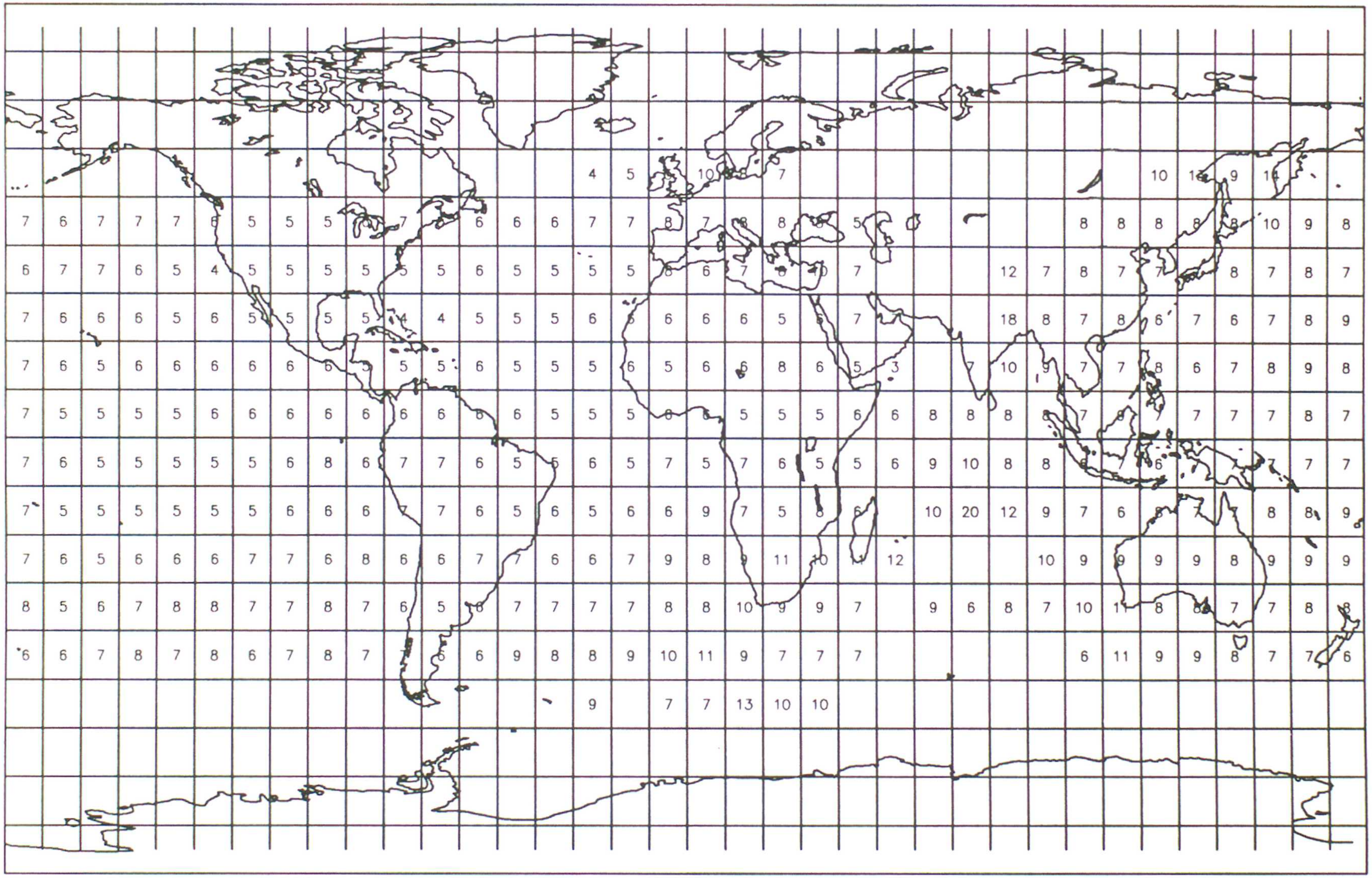

REPRESENTS 5 M/S

SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
MAY 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



-.4 -1.6 -3.5 -2.4 -3.9 -1.2 -5.0
-2.0 .8 .2 -2.3 -1.6 -1.0 -1.1 -.6 .1 -1.0 -1.3 -.9 -.7 -1.9 -1.8 -1.9 -2.7 -2.7 -2.7 -2.4 -1.3 .7 -1.0 -.8 -1.2 -1.6 -.9 -.2
.5 -.8 1.1 -.5 -.4 -.7 -.6 -.3 .1 .3 .1 -.5 .2 -.6 -.7 -.8 .1 -.8 -1.6 -.7 -.6 -1.8 -2.9 7.9 2.1 1.1 1.3 .5 .4 1.6 1.0 1.7
.9 -.4 1.0 1.2 .9 .7 .2 .6 .3 .2 .4 .0 .4 .5 -.5 -.3 -.9 -.1 -.2 -.4 -.6 -1.2 -3.5 5.5 -.1 -.2 .7 .4 .1 1.5 2.2 2.6 3.1
2.0 .3 .2 1.1 1.2 1.3 1.4 .6 .6 1.7 1.1 .1 .8 1.0 .5 -.3 1.3 -1.0 1.3 1.3 .7 -.4 .5 -.8 1.8 4.2 3.3 1.1 1.4 .9 2.4 2.0 1.9 4.5 2.5
1.9 1.2 .9 1.2 1.6 1.0 .6 1.8 2.4 1.9 1.0 1.6 1.0 1.9 1.2 .9 .8 1.2 .2 .6 -.8 -.3 -1.5 .9 4.6 2.5 2.5 2.2 1.7 2.2 2.1 1.1 2.4 2.4 3.0 1.8
1.8 2.1 2.0 2.0 1.6 .9 .7 1.7 1.0 1.2 -.3 1.0 1.0 .6 .9 1.8 .8 3.7 2.3 2.3 .5 .5 -.3 .9 3.3 1.1 3.2 2.5 1.4 1.3 .9 .5 2.1 2.8 2.9 3.1
2.0 1.1 .2 .8 .8 1.5 .2 1.4 .5 1.8 .7 -.3 .7 .3 .1 .6 1.2 .7 -2.7 -2.3 .9 3.1 -1.5 4.3 -6.5 5.3 3.4 2.1 .8 -1.9 -1.5 -.6 -1.6 1.4 3.8
.5 -.1 -1.1 -.6 .0 -.1 -1.2 -1.0 .0 -.9 .6 .9 -.4 -2.0 -2.4 -1.5 -.8 -2.2 -1.4 -.7 -4.1 -1.7 -4.9 -3.6 -2.0 -.8 -1.0 -1.3 -1.1 1.0 -1.6 -2.4 -.5
-3.3 -.3 -.1 .1 -1.6 -2.0 -2.6 -1.7 -3.4 -2.4 -1.5 .1 -.2 -1.0 -1.4 -1.2 -.8 -3.1 -2.0 -3.2 -2.4 -3.5 -2.2 .4 1.8 -.9 -3.6 -4.2 -3.8 -2.4 -2.8 -.8 -.6 -.9 -2.6
-.9 .2 1.2 .6 .5 -1.9 -.3 -.9 -.8 -3.0 -1.4 -1.6 -1.6 -3.3 -2.0 -1.7 -3.3 -3.8 -5.3 -3.7 -2.4 -2.7 -4.3 .9 -2.3 -3.8 -3.4 -2.7 -1.7 -2.2 -2.9
-4.1 -2.2 -.7 -8.3 -5.8 -3.2

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
MAY 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


4 5 10 7 10 14 9 14
7 6 7 7 7 6 5 5 5 6 7 6 6 6 7 7 8 7 8 8 8 5 8 8 8 8 8 10 9 8
6 7 7 6 5 4 5 5 5 5 5 5 6 5 5 5 5 8 6 7 8 10 7 12 7 8 7 7 8 7 8 7
7 6 6 6 5 6 5 5 5 5 4 4 5 5 5 6 6 6 6 6 5 6 7 18 8 7 8 6 7 6 7 8 9
7 6 5 6 6 6 6 6 6 5 5 5 6 5 5 5 6 5 6 6 8 6 5 3 7 10 9 7 7 8 6 7 8 9 8
7 5 5 5 5 6 6 6 6 6 6 6 6 6 5 5 5 8 6 5 5 5 6 6 8 8 8 8 7 8 7 7 7 7 8 7
7 6 5 5 5 5 5 6 8 6 7 7 6 5 5 6 5 7 5 7 6 5 5 6 9 10 8 8 6 7 6 7 7 7
7 5 5 5 5 5 5 6 6 6 7 7 6 5 6 5 6 6 9 7 5 6 6 10 20 12 9 7 6 8 7 7 8 8 9
7 6 5 6 6 6 7 7 6 8 6 6 7 7 6 6 7 9 8 9 11 10 11 12 10 9 9 9 9 8 9 9 9
8 5 6 7 8 8 7 7 8 7 6 5 6 7 7 7 7 8 8 10 9 9 7 9 6 8 7 10 11 8 8 7 7 8 8
6 6 7 8 7 8 6 7 8 7 7 6 6 9 8 8 9 10 11 9 7 7 7 6 11 9 9 8 7 7 6
9 7 7 13 10 10

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-12, NOAA-14 500 km.

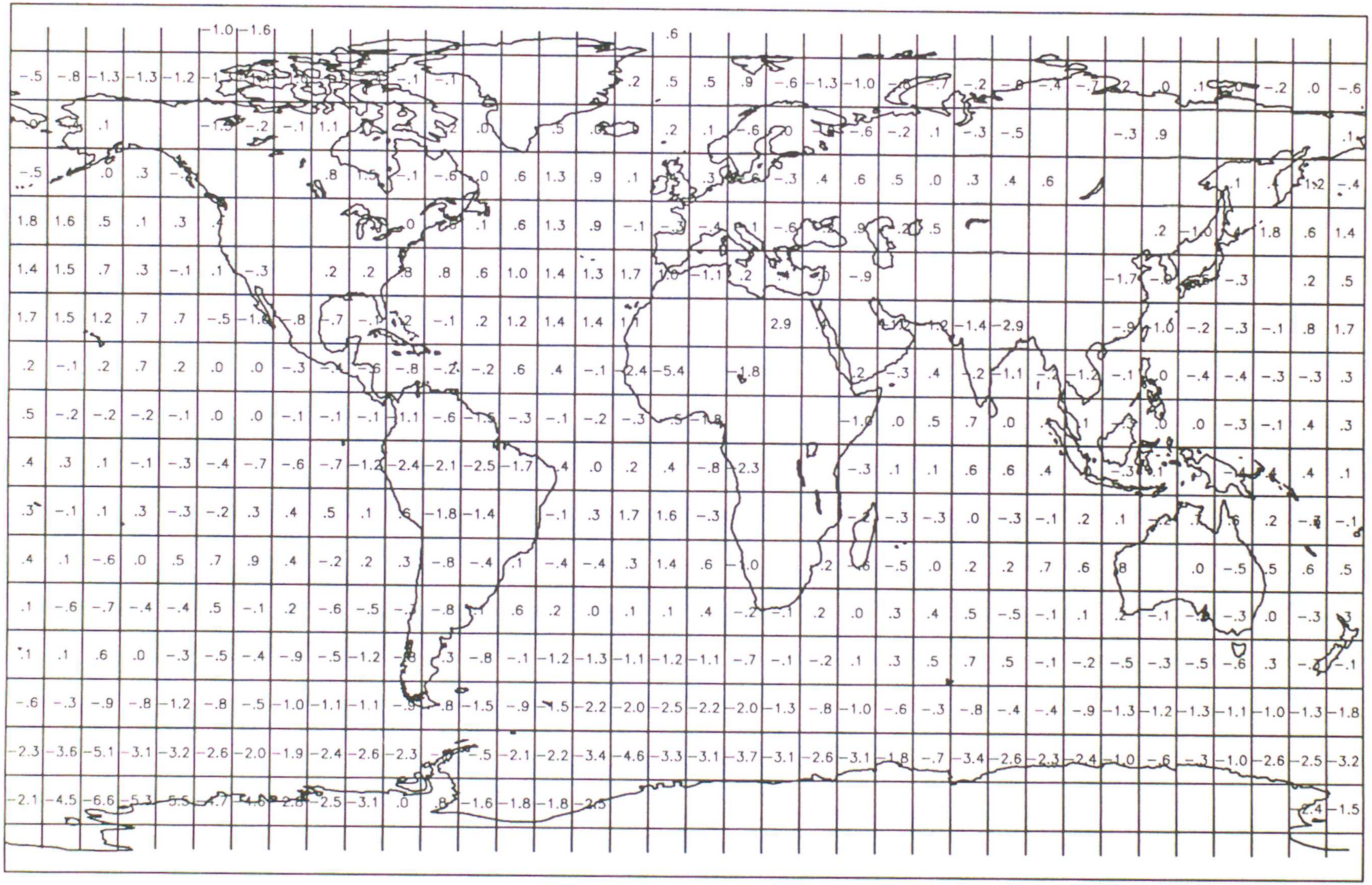
Standard of comparison :Background field from Bracknell global model.

Selection Criteria :All SATEM soundings where number of observations > 30.

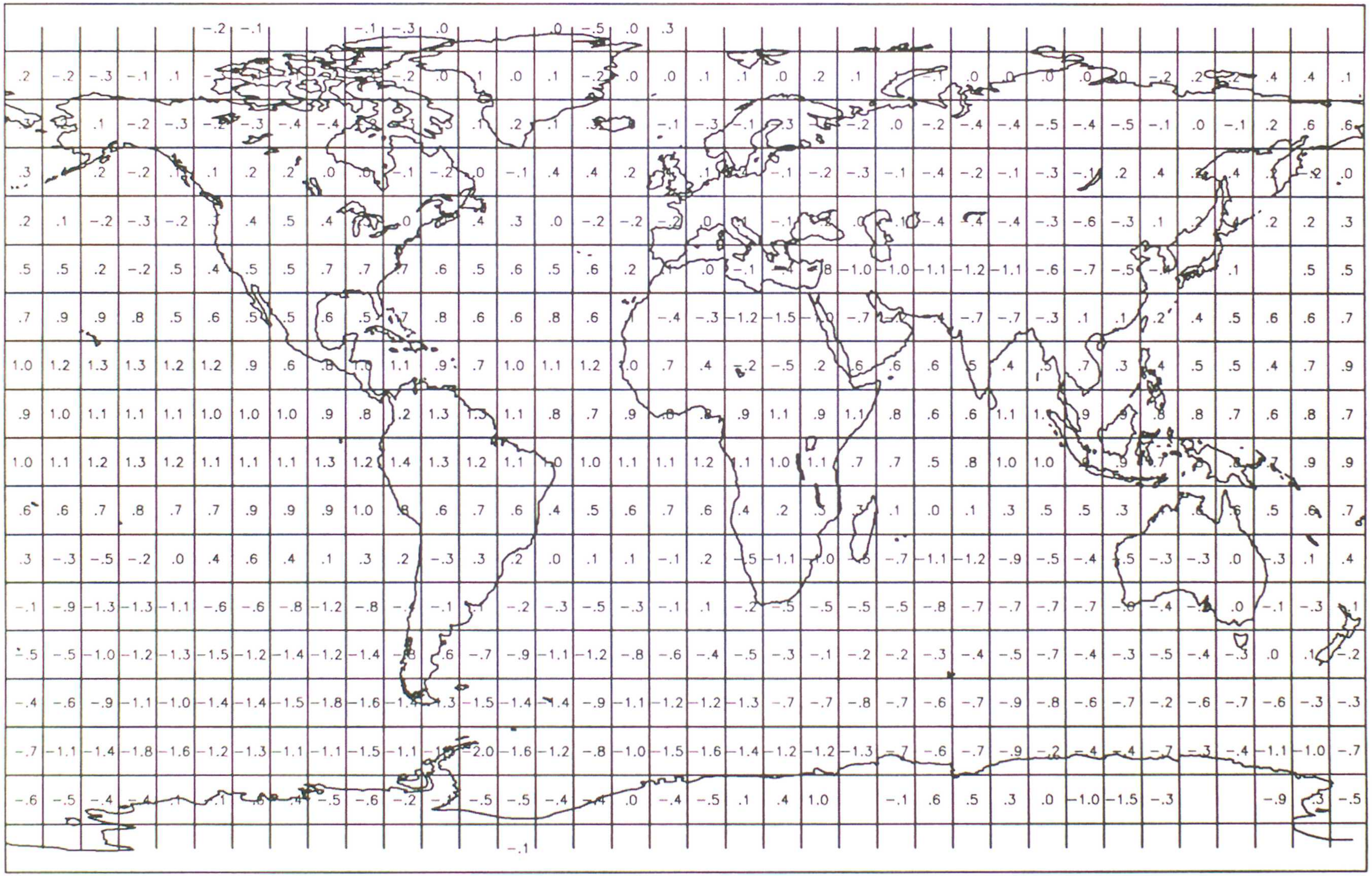
Data Extracted :Layer: 850 - 1000 hPa
100 - 300 hPa
30 - 50 hPa

:Mean observation minus background temperature differences

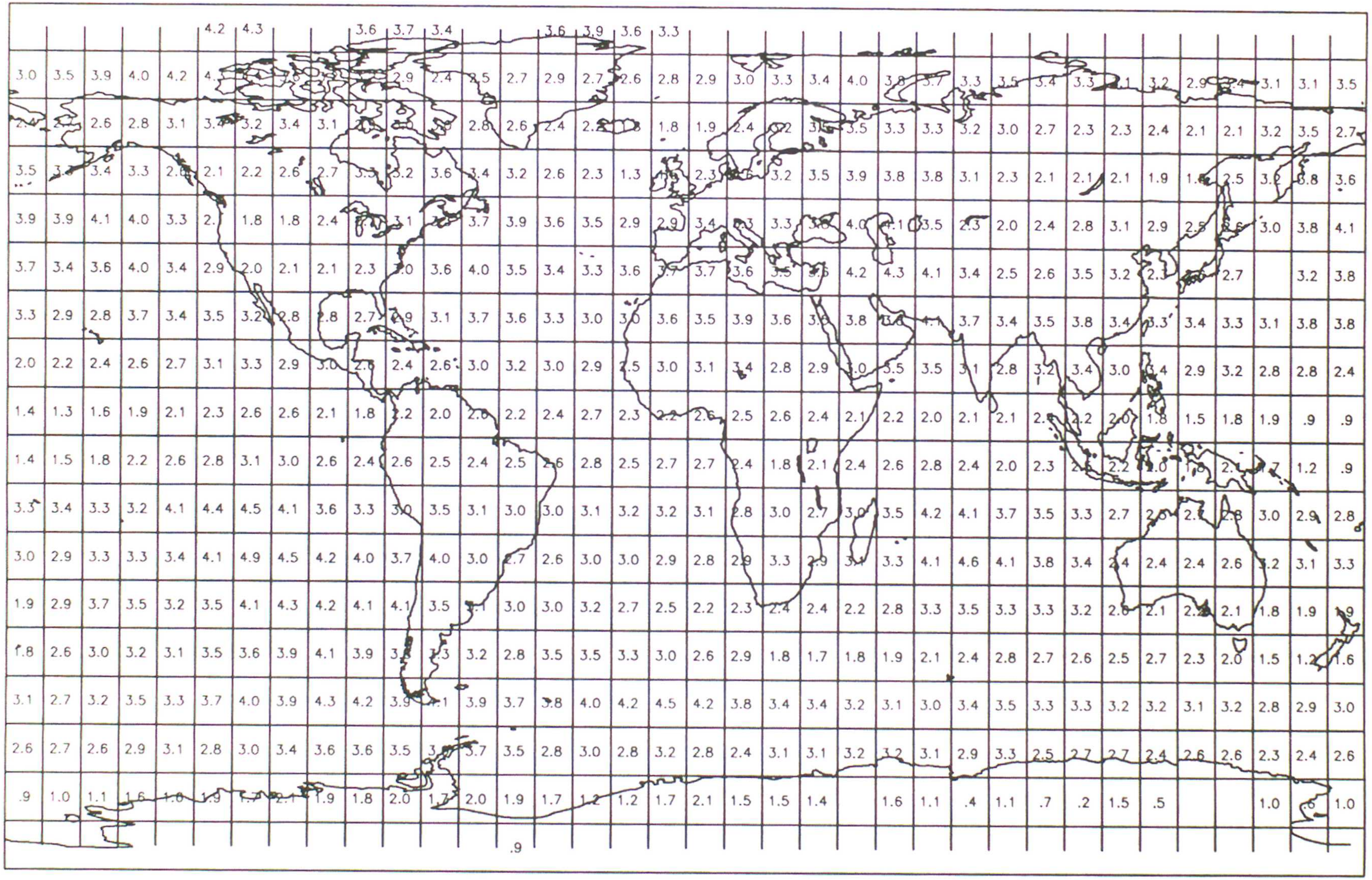
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
MAY 1997
FIGURE 25
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


-1.0 -1.6 .6
-.5 -.8 -1.3 -1.3 -1.2 -.1 -.1 .2 .5 .5 .9 -.6 -1.3 -1.0 -.7 -.2 -.4 .2 .0 .1 -.2 .0 -.6
.1 -1.5 -.2 -.1 1.1 .2 .0 .5 .2 .1 -.6 -.6 -.2 .1 -.3 -.5 -.3 .9 .1
-.5 .0 .3 .8 1.5 -.1 -.6 .0 .6 1.3 .9 .1 .3 -.3 .4 .6 .5 .0 .3 .4 .6 .1 1.2 -.4
1.8 1.6 .5 .1 .3 .0 .1 .6 1.3 .9 -.1 -.3 -.4 .1 -.6 .9 .2 .5 .2 -1.0 1.8 .6 1.4
1.4 1.5 .7 .3 -.1 .1 -.3 .2 .2 .8 .8 .6 1.0 1.4 1.3 1.7 1.0 -1.1 .2 -.9 -1.7 -.3 .2 .5
1.7 1.5 1.2 .7 .7 -.5 -1.6 -.8 -.7 -.1 .2 -.1 .2 1.2 1.4 1.4 2.9 -1.2 -1.4 -2.9 -.9 1.0 -.2 -.3 -.1 .8 1.7
.2 -.1 .2 .7 .2 .0 .0 -.3 -.8 -.2 -.2 .6 .4 -.1 -2.4 -5.4 -1.8 .2 -.3 .4 .2 -1.1 -1.2 -.1 .0 -.4 -.4 -.3 -.3 .3
.5 -.2 -.2 -.2 -.1 .0 .0 -.1 -.1 -.1 -1.1 -.6 -1.5 -.3 -.1 -.2 -.3 -1.8 -1.0 .0 .5 .7 .0 .1 .0 .0 -.3 -.1 .4 .3
.4 .3 .1 -.1 -.3 -.4 -.7 -.6 -.7 -1.2 -2.4 -2.1 -2.5 -1.7 .4 .0 .2 .4 -.8 2.3 -.3 .1 .1 .6 .6 .4 -.3 .4 .1
.3 -.1 .1 .3 -.3 -.2 .3 .4 .5 .1 .6 -1.8 -1.4 -.1 .3 1.7 1.6 -.3 -.3 -.3 .0 -.3 -.1 .2 .1 .2 -.1
.4 .1 -.6 .0 .5 .7 .9 .4 -.2 .2 .3 -.8 -.4 .1 -.4 -.4 .3 1.4 .6 .0 .2 -.5 .0 .2 .2 .7 .6 .8 .0 -.5 .5 .6 .5
.1 -.6 -.7 -.4 -.4 .5 -.1 .2 -.6 -.5 -.8 .6 .2 .0 .1 .1 .4 .2 .0 .3 .4 .5 -.5 -.1 .1 -.1 -.3 .0 -.3 .3
.1 .1 .6 .0 -.3 -.5 -.4 -.9 -.5 -1.2 .3 -.8 -.1 -1.2 -1.3 -1.1 -1.2 -1.1 -.7 -.1 -.2 .1 .3 .5 .7 .5 -.1 -.2 -.5 -.3 -.5 -.6 .3 -.1
-.6 -.3 -.9 -.8 -1.2 -.8 -.5 -1.0 -1.1 -1.1 .8 -1.5 -.9 -1.5 -2.2 -2.0 -2.5 -2.2 -2.0 -1.3 -.8 -1.0 -.6 -.3 -.8 -.4 -.4 -.9 -1.3 -1.2 -1.3 -1.1 -1.0 -1.3 -1.8
-2.3 -3.6 -5.1 -3.1 -3.2 -2.6 -2.0 -1.9 -2.4 -2.6 -2.3 .5 -2.1 -2.2 -3.4 -4.6 -3.3 -3.1 -3.7 -3.1 -2.6 -3.1 -1.8 -.7 -3.4 -2.6 -2.3 -2.4 -1.0 -.6 -.3 -1.0 -2.6 -2.5 -3.2
-2.1 -4.5 -6.6 -5.3 -5.5 -4.7 -4.6 -2.8 -2.5 -3.1 .0 .8 -1.6 -1.8 -1.8 -2.5 -2.4 -1.5

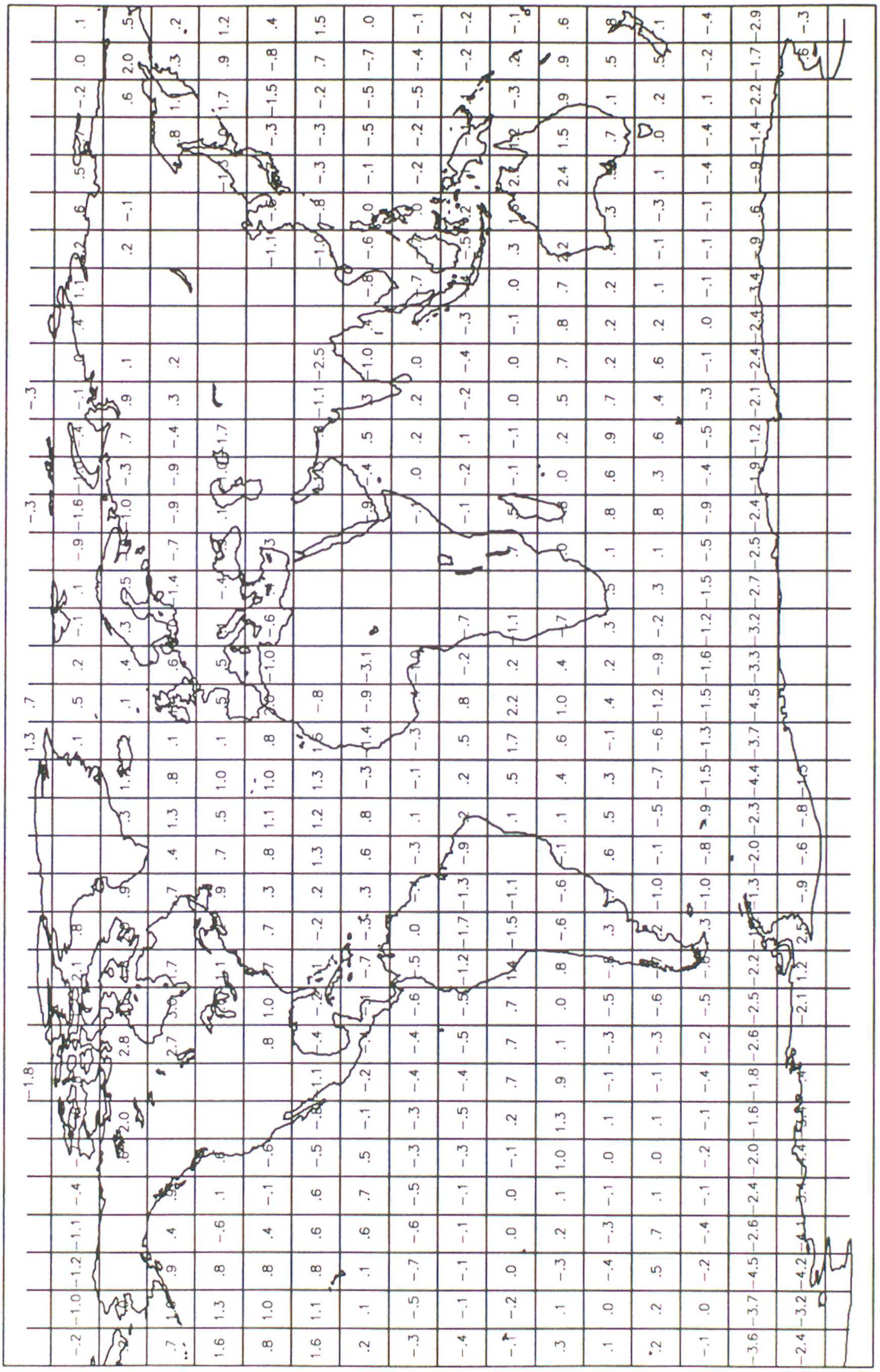
500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
MAY 1997 FIGURE 26
NOAA−12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT


−.2 −.1 −.1 −.3 .0 .0 −.5 .0 .3
.2 −.2 −.3 −.1 .1 −.2 .0 .1 .0 .1 −.2 .0 .0 .1 .1 .0 .2 .1 −.1 .0 .0 .0 .0 .0 −.2 .2 .2 .4 .4 .1
.1 −.2 −.3 −.2 −.3 −.4 −.4 .1 .2 .1 .3 −.1 −.3 −.1 .3 −.2 .0 −.2 −.4 −.4 −.5 −.4 −.5 −.1 .0 −.1 .2 .6 .6
.3 .2 −.2 .1 .1 .2 .2 .0 .0 −.1 −.2 .0 −.1 .4 .4 .2 .1 −.1 −.2 −.3 −.1 −.4 −.2 −.1 −.3 −.1 .2 .4 .2 .4 .2 −.2 .0
.2 .1 −.2 −.3 −.2 .3 .4 .5 .4 .0 .4 .3 .0 −.2 −.2 −.2 .0 .1 −.1 .2 .0 .1 .0 −.4 −.4 −.4 −.3 −.6 −.3 .1 .2 .4 .2 .2 .3
.5 .5 .2 −.2 .5 .4 .5 .5 .7 .7 .7 .6 .5 .6 .5 .6 .2 .1 .0 −.1 −.4 −.8 −1.0 −1.0 −1.1 −1.2 −1.1 −.6 −.7 −.5 −.4 .1 .5 .5
.7 .9 .9 .8 .5 .6 .5 .5 .6 .5 .7 .8 .6 .6 .8 .6 .1 −.4 −.3 −1.2 −1.5 −1.0 −.7 −.2 −.4 −.7 −.7 −.3 .1 .1 .2 .4 .5 .6 .6 .7
1.0 1.2 1.3 1.3 1.2 1.2 .9 .6 .8 1.0 1.1 .9 .7 1.0 1.1 1.2 1.0 .7 .4 −.2 −.5 .2 .6 .6 .6 .5 .4 .5 .7 .3 .4 .5 .5 .4 .7 .9
.9 1.0 1.1 1.1 1.1 1.0 1.0 1.0 .9 .8 .2 1.3 1.3 1.1 .8 .7 .9 .8 .8 .9 1.1 .9 1.1 .8 .6 .6 1.1 1.1 .9 .9 .8 .8 .7 .6 .8 .7
1.0 1.1 1.2 1.3 1.2 1.1 1.1 1.1 1.3 1.2 1.4 1.3 1.2 1.1 1.0 1.0 1.1 1.1 1.2 1.1 1.0 1.1 .7 .7 .5 .8 1.0 1.0 .9 .9 .7 .8 .8 .7 .9 .9
.6 .6 .7 .8 .7 .7 .9 .9 .9 1.0 .8 .6 .7 .6 .4 .5 .6 .7 .6 .4 .2 .3 .3 .1 .0 .1 .3 .5 .5 .3 .6 .6 .5 .6 .7
.3 −.3 −.5 −.2 .0 .4 .6 .4 .1 .3 .2 −.3 .3 .2 .0 .1 .1 −.1 .2 −.5 −1.1 −1.0 −.5 −.7 −1.1 −1.2 −.9 −.5 −.4 −.5 −.3 −.3 .0 −.3 .1 .4
−.1 −.9 −1.3 −1.3 −1.1 −.6 −.6 −.8 −1.2 −.8 −.4 −.1 .1 −.2 −.3 −.5 −.3 −.1 .1 −.2 −.5 −.5 −.5 −.5 −.8 −.7 −.7 −.7 −.7 −.6 −.4 −.2 .0 −.1 −.3 .1
−.5 −.5 −1.0 −1.2 −1.3 −1.5 −1.2 −1.4 −1.2 −1.4 −.8 .6 −.7 −.9 −1.1 −1.2 −.8 −.6 −.4 −.5 −.3 −.1 −.2 −.2 −.3 −.4 −.5 −.7 −.4 −.3 −.5 −.4 −.3 .0 .1 −.2
−.4 −.6 −.9 −1.1 −1.0 −1.4 −1.4 −1.5 −1.8 −1.6 −1.4 −1.3 −1.5 −1.4 −1.4 −.9 −1.1 −1.2 −1.2 −1.3 −.7 −.7 −.8 −.7 −.6 −.7 −.9 −.8 −.6 −.7 −.2 −.6 −.7 −.6 −.3 −.3
−.7 −1.1 −1.4 −1.8 −1.6 −1.2 −1.3 −1.1 −1.1 −1.5 −1.1 −1.1 −2.0 −1.6 −1.2 −.8 −1.0 −1.5 −1.6 −1.4 −1.2 −1.2 −1.3 −.7 −.6 −.7 −.9 −.2 −.4 −.4 −.7 −.3 −.4 −1.1 −1.0 −.7
−.6 −.5 −.4 −.4 .1 .1 .6 .4 −.5 −.6 −.2 −.1 −.5 −.5 −.4 −.4 .0 −.4 −.5 .1 .4 1.0 −.1 .6 .5 .3 .0 −1.0 −1.5 −.3 −.9 .3 −.5
−.1

500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
MAY 1997
FIGURE 27
NOAA–12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

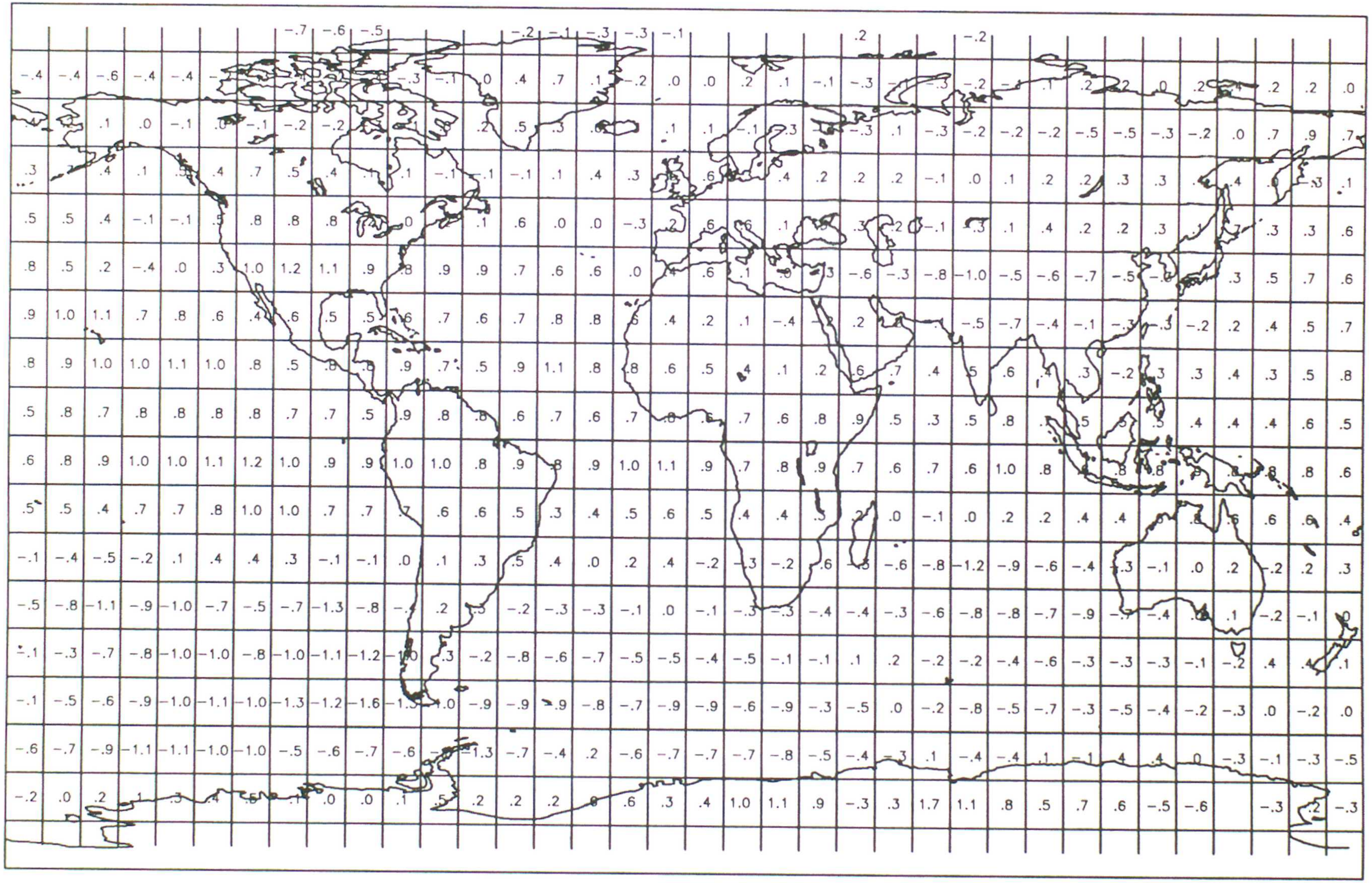

4.2 4.3 3.6 3.7 3.4 3.6 3.9 3.6 3.3
3.0 3.5 3.9 4.0 4.2 4. 2.9 2.4 2.5 2.7 2.9 2.7 2.6 2.8 2.9 3.0 3.3 3.4 4.0 3.8 3.7 3.3 3.5 3.4 3.3 3.1 3.2 2.9 3.4 3.1 3.1 3.5
2.6 2.8 3.1 3.4 3.2 3.4 3.1 2.8 2.6 2.4 2.2 1.8 1.9 2.4 2.2 3.6 3.5 3.3 3.3 3.2 3.0 2.7 2.3 2.3 2.4 2.1 2.1 3.2 3.5 2.7
3.5 3.4 3.3 2.8 2.1 2.2 2.6 2.7 3.3 3.2 3.6 3.4 3.2 2.6 2.3 1.3 2.3 3.2 3.5 3.9 3.8 3.8 3.1 2.3 2.1 2.1 2.1 1.9 1.6 2.5 3.2 3.8 3.6
3.9 3.9 4.1 4.0 3.3 2. 1.8 1.8 2.4 3.1 3.7 3.9 3.6 3.5 2.9 2.9 3.4 3.3 3.3 3.8 4.0 4.1 3.5 2.3 2.0 2.4 2.8 3.1 2.9 2.5 3.0 3.8 4.1
3.7 3.4 3.6 4.0 3.4 2.9 2.0 2.1 2.1 2.3 3.0 3.6 4.0 3.5 3.4 3.3 3.6 3.7 3.7 3.6 3.5 3.5 4.2 4.3 4.1 3.4 2.5 2.6 3.5 3.2 2.3 2.7 3.2 3.8
3.3 2.9 2.8 3.7 3.4 3.5 3.2 2.8 2.8 2.7 2.9 3.1 3.7 3.6 3.3 3.0 3.0 3.6 3.5 3.9 3.6 3.6 3.8 3.6 4.1 3.7 3.4 3.5 3.8 3.4 3.3 3.4 3.3 3.1 3.8 3.8
2.0 2.2 2.4 2.6 2.7 3.1 3.3 2.9 3.0 2.6 2.4 2.6 3.0 3.2 3.0 2.9 2.5 3.0 3.1 3.4 2.8 2.9 3.0 3.5 3.5 3.1 2.8 3.2 3.4 3.0 3.4 2.9 3.2 2.8 2.8 2.4
1.4 1.3 1.6 1.9 2.1 2.3 2.6 2.6 2.1 1.8 2.2 2.0 2.6 2.2 2.4 2.7 2.3 2.2 2.6 2.5 2.6 2.4 2.1 2.2 2.0 2.1 2.1 2.1 2.2 2.0 1.8 1.5 1.8 1.9 .9 .9
1.4 1.5 1.8 2.2 2.6 2.8 3.1 3.0 2.6 2.4 2.6 2.5 2.4 2.5 2.6 2.8 2.5 2.7 2.7 2.4 1.8 2.1 2.4 2.6 2.8 2.4 2.0 2.3 2.2 2.2 2.0 1.8 2.1 1.7 1.2 .9
3.3 3.4 3.3 3.2 4.1 4.4 4.5 4.1 3.6 3.3 3.0 3.5 3.1 3.0 3.0 3.1 3.2 3.2 3.1 2.8 3.0 2.7 3.0 3.5 4.2 4.1 3.7 3.5 3.3 2.7 2.6 2.7 2.8 3.0 2.9 2.8
3.0 2.9 3.3 3.3 3.4 4.1 4.9 4.5 4.2 4.0 3.7 4.0 3.0 2.7 2.6 3.0 3.0 2.9 2.8 2.9 3.3 2.9 3.1 3.3 4.1 4.6 4.1 3.8 3.4 2.4 2.4 2.4 2.6 3.2 3.1 3.3
1.9 2.9 3.7 3.5 3.2 3.5 4.1 4.3 4.2 4.1 4.1 3.5 3.1 3.0 3.0 3.2 2.7 2.5 2.2 2.3 2.4 2.4 2.2 2.8 3.3 3.5 3.3 3.3 3.2 2.0 2.1 2.2 2.1 1.8 1.9 .9
1.8 2.6 3.0 3.2 3.1 3.5 3.6 3.9 4.1 3.9 3.3 3.3 3.2 2.8 3.5 3.5 3.3 3.0 2.6 2.9 1.8 1.7 1.8 1.9 2.1 2.4 2.8 2.7 2.6 2.5 2.7 2.3 2.0 1.5 1.2 1.6
3.1 2.7 3.2 3.5 3.3 3.7 4.0 3.9 4.3 4.2 3.9 4.1 3.9 3.7 3.8 4.0 4.2 4.5 4.2 3.8 3.4 3.4 3.2 3.1 3.0 3.4 3.5 3.3 3.3 3.2 3.2 3.1 3.2 2.8 2.9 3.0
2.6 2.7 2.6 2.9 3.1 2.8 3.0 3.4 3.6 3.6 3.5 3.7 3.7 3.5 2.8 3.0 2.8 3.2 2.8 2.4 3.1 3.1 3.2 3.2 3.1 2.9 3.3 2.5 2.7 2.7 2.4 2.6 2.6 2.3 2.4 2.6
.9 1.0 1.1 1.6 1.6 1.9 1.7 2.1 1.9 1.8 2.0 1.7 2.0 1.9 1.7 1.2 1.2 1.7 2.1 1.5 1.5 1.4 1.6 1.1 .4 1.1 .7 .2 1.5 .5 1.0 .6 1.0
.9

500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
MAY 1997
FIGURE 28
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



500 KM SATEMS : MEAN O−B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
MAY 1997
NOAA−14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29



500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
MAY 1997
FIGURE 30
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

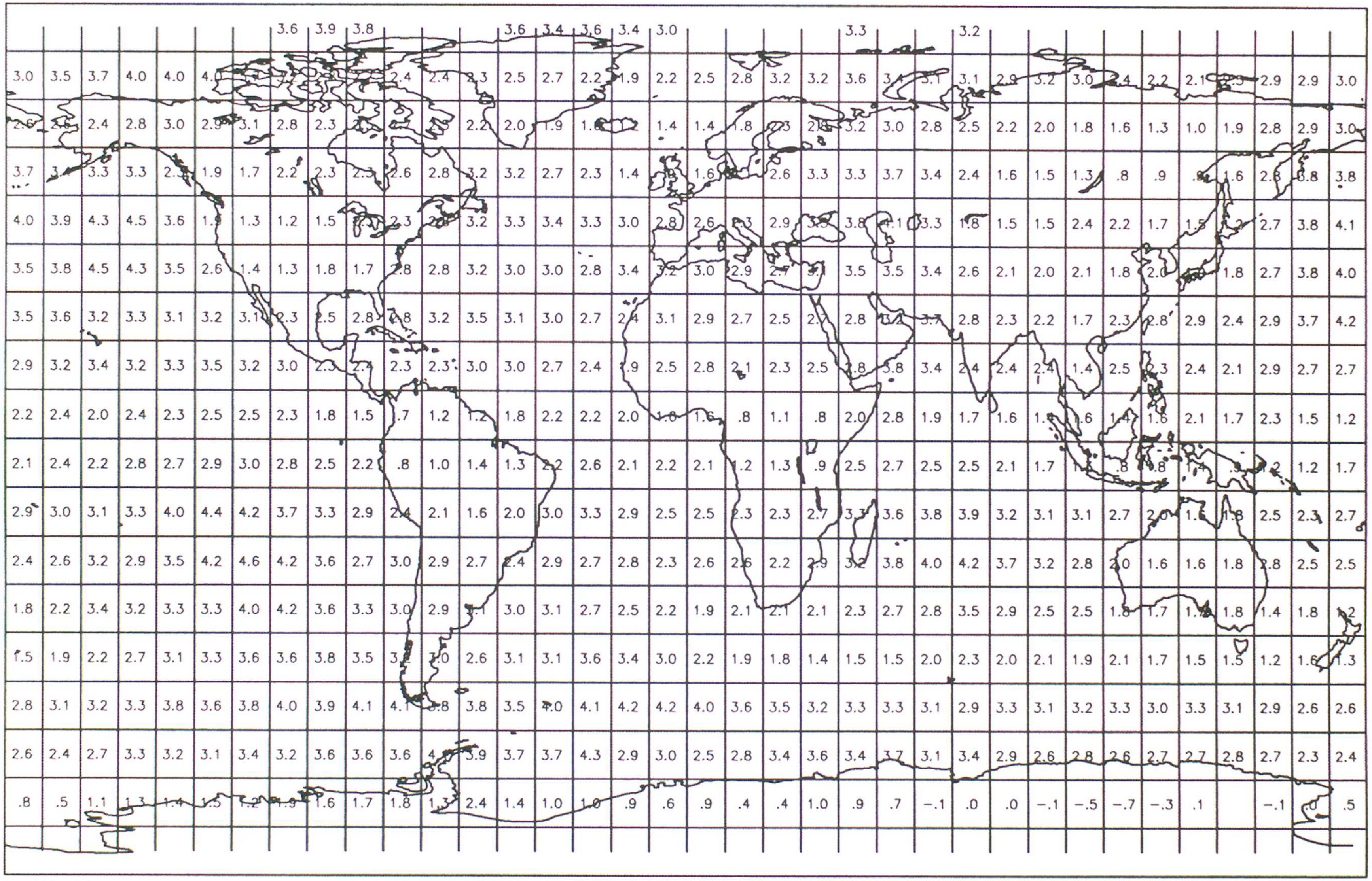

3.6 3.9 3.8 3.6 3.4 3.6 3.4 3.0 3.3 3.2
3.0 3.5 3.7 4.0 4.0 2.4 2.4 2.3 2.5 2.7 2.2 1.9 2.2 2.5 2.8 3.2 3.2 3.6 3.4 3.1 3.1 2.9 3.2 3.0 2.4 2.2 2.1 2.9 2.9 3.0
2.6 2.6 2.4 2.8 3.0 2.9 3.1 2.8 2.3 2.2 2.0 1.9 1.6 1.4 1.4 1.8 2.3 2.8 3.2 3.0 2.8 2.5 2.2 2.0 1.8 1.6 1.3 1.0 1.9 2.8 2.9 3.0
3.7 3.4 3.3 3.3 2.3 1.9 1.7 2.2 2.3 2.3 2.6 2.8 3.2 3.2 2.7 2.3 1.4 1.6 2.6 3.3 3.3 3.7 3.4 2.4 1.6 1.5 1.3 .8 .9 .9 1.6 2.8 3.8 3.8
4.0 3.9 4.3 4.5 3.6 1.9 1.3 1.2 1.5 2.3 2.8 3.2 3.3 3.4 3.3 3.0 2.8 2.6 2.3 2.9 3.5 3.8 4.1 3.3 1.8 1.5 1.5 2.4 2.2 1.7 1.5 2.7 3.8 4.1
3.5 3.8 4.5 4.3 3.5 2.6 1.4 1.3 1.8 1.7 2.8 2.8 3.2 3.0 3.0 2.8 3.4 3.2 3.0 2.9 2.7 3.1 3.5 3.5 3.4 2.6 2.1 2.0 2.1 1.8 2.0 1.8 2.7 3.8 4.0
3.5 3.6 3.2 3.3 3.1 3.2 3.1 2.3 2.5 2.8 2.8 3.2 3.5 3.1 3.0 2.7 2.4 3.1 2.9 2.7 2.5 2.7 2.8 3.2 3.7 2.8 2.3 2.2 1.7 2.3 2.8 2.9 2.4 2.9 3.7 4.2
2.9 3.2 3.4 3.2 3.3 3.5 3.2 3.0 2.3 2.4 2.3 2.3 3.0 3.0 2.7 2.4 1.9 2.5 2.8 2.1 2.3 2.5 2.8 3.8 3.4 2.4 2.4 2.4 1.4 2.5 2.3 2.4 2.1 2.9 2.7 2.7
2.2 2.4 2.0 2.4 2.3 2.5 2.5 2.3 1.8 1.5 .7 1.2 1.2 1.8 2.2 2.2 2.0 1.6 1.6 .8 1.1 .8 2.0 2.8 1.9 1.7 1.6 1.6 1.6 1.4 1.6 2.1 1.7 2.3 1.5 1.2
2.1 2.4 2.2 2.8 2.7 2.9 3.0 2.8 2.5 2.2 .8 1.0 1.4 1.3 2.2 2.6 2.1 2.2 2.1 1.2 1.3 .9 2.5 2.7 2.5 2.5 2.1 1.7 1.7 .8 .8 1.4 .9 1.2 1.2 1.7
2.9 3.0 3.1 3.3 4.0 4.4 4.2 3.7 3.3 2.9 2.4 2.1 1.6 2.0 3.0 3.3 2.9 2.5 2.5 2.3 2.3 2.7 3.3 3.6 3.8 3.9 3.2 3.1 3.1 2.7 2.0 1.6 1.8 2.5 2.3 2.7
2.4 2.6 3.2 2.9 3.5 4.2 4.6 4.2 3.6 2.7 3.0 2.9 2.7 2.4 2.9 2.7 2.8 2.3 2.6 2.6 2.2 2.9 3.2 3.8 4.0 4.2 3.7 3.2 2.8 3.0 1.6 1.6 1.8 2.8 2.5 2.5
1.8 2.2 3.4 3.2 3.3 3.3 4.0 4.2 3.6 3.3 3.0 2.9 3.1 3.0 3.1 2.7 2.5 2.2 1.9 2.1 2.1 2.1 2.3 2.7 2.8 3.5 2.9 2.5 2.5 1.8 1.7 1.7 1.8 1.4 1.8 1.2
1.5 1.9 2.2 2.7 3.1 3.3 3.6 3.6 3.8 3.5 3.2 3.0 2.6 3.1 3.1 3.6 3.4 3.0 2.2 1.9 1.8 1.4 1.5 1.5 2.0 2.3 2.0 2.1 1.9 2.1 1.7 1.5 1.5 1.2 1.6 1.3
2.8 3.1 3.2 3.3 3.8 3.6 3.8 4.0 3.9 4.1 4.1 3.8 3.8 3.5 4.0 4.1 4.2 4.2 4.0 3.6 3.5 3.2 3.3 3.3 3.1 2.9 3.3 3.1 3.2 3.3 3.0 3.3 3.1 2.9 2.6 2.6
2.6 2.4 2.7 3.3 3.2 3.1 3.4 3.2 3.6 3.6 3.6 4.3 3.9 3.7 3.7 4.3 2.9 3.0 2.5 2.8 3.4 3.6 3.4 3.7 3.1 3.4 2.9 2.6 2.8 2.6 2.7 2.7 2.8 2.7 2.3 2.4
.8 .5 1.1 1.3 1.4 1.5 1.2 1.9 1.6 1.7 1.8 1.3 2.4 1.4 1.0 1.0 .9 .6 .9 .4 .4 1.0 .9 .7 –.1 .0 .0 –.1 –.5 –.7 –.3 .1 –.1 .0 .5

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored
:Mean sea-level pressure (hPa)
:Wind speed ($m\ s^{-1}$)
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS
:15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13903	25.9	-35.7	ALL	MSLP	SUR	277	0	0	0.7	0.7	0.9
13905	22.3	-44.4	ALL	MSLP	SUR	265	0	0	0.8	0.4	0.9
13906	14.4	-47.1	ALL	MSLP	SUR	253	0	0	1.1	0.5	1.2
13910	23.6	-44.3	ALL	MSLP	SUR	263	0	0	0.8	0.2	0.9
13911	23.4	-50.6	ALL	MSLP	SUR	284	0	0	1.0	0.5	1.1
13912	20.5	-59.2	ALL	MSLP	SUR	291	0	0	1.0	1.1	1.5
13913	19.6	-47.8	ALL	MSLP	SUR	293	0	0	0.9	0.7	1.1
13915	16.9	-45.3	ALL	MSLP	SUR	275	0	0	0.9	0.0	0.9
41501	35.5	-75.7	ALL	MSLP	SUR	118	0	0	1.0	-0.7	1.2
41502	35.2	-75.7	ALL	MSLP	SUR	322	0	0	1.1	-1.4	1.7
41529	39.4	-33.5	ALL	MSLP	SUR	287	0	0	0.7	0.3	0.8
41530	35.3	-28.9	ALL	MSLP	SUR	287	0	0	0.7	0.3	0.7
41611	15.2	-56.9	ALL	MSLP	SUR	256	0	0	0.8	-0.2	0.8
41612	16.6	-58.7	ALL	MSLP	SUR	265	0	0	0.7	0.2	0.8
41613	21.8	-64.7	ALL	MSLP	SUR	264	0	0	0.8	0.3	0.9
41922	24.3	-45.3	ALL	MSLP	SUR	274	0	0	0.9	1.1	1.5
41924	22.3	-54.7	ALL	MSLP	SUR	272	0	0	0.9	-0.8	1.2
44513	53.0	-23.5	ALL	MSLP	SUR	326	0	0	0.9	-0.1	0.9
44605	47.4	-34.1	ALL	MSLP	SUR	772	123	16	1.6	0.2	1.6
44607	49.4	-33.3	ALL	MSLP	SUR	814	0	0	1.1	0.3	1.1
44608	55.5	-28.2	ALL	MSLP	SUR	888	1	0	1.0	0.5	1.1
44613	56.5	-33.4	ALL	MSLP	SUR	709	3	0	1.3	0.0	1.3
44624	56.9	-17.8	ALL	MSLP	SUR	1164	3	0	1.2	0.4	1.3
44726	58.7	-7.5	ALL	MSLP	SUR	1092	2	0	0.9	0.2	0.9
44727	56.0	-42.5	ALL	MSLP	SUR	1717	0	0	1.2	0.1	1.2
44728	62.4	-24.6	ALL	MSLP	SUR	1185	3	0	1.1	0.0	1.1
44742	45.9	-21.8	ALL	MSLP	SUR	530	0	0	0.9	-0.1	0.9
44743	49.6	-15.7	ALL	MSLP	SUR	744	7	1	1.0	0.2	1.1
44760	28.2	-57.9	ALL	MSLP	SUR	339	3	1	1.1	0.1	1.1
44762	45.2	-25.1	ALL	MSLP	SUR	548	0	0	0.9	0.2	0.9
44767	61.3	-9.3	ALL	MSLP	SUR	598	24	4	5.0	-1.4	5.2
44768	59.0	-36.7	ALL	MSLP	SUR	868	0	0	1.1	0.5	1.2
44769	50.6	-48.5	ALL	MSLP	SUR	699	0	0	1.3	-0.1	1.3
44770	24.2	-72.9	ALL	MSLP	SUR	53	0	0	1.2	0.2	1.2
44773	54.2	-41.0	ALL	MSLP	SUR	396	0	0	1.5	-0.2	1.5
44775	61.2	-35.6	ALL	MSLP	SUR	909	0	0	1.2	0.3	1.3
44776	57.9	-6.9	ALL	MSLP	SUR	568	2	0	1.3	-0.1	1.3
44779	47.6	-37.4	ALL	MSLP	SUR	834	4	0	1.2	0.2	1.3
44911	57.5	-22.5	ALL	MSLP	SUR	77	0	0	0.9	0.8	1.2
44912	52.0	-49.4	ALL	MSLP	SUR	139	0	0	1.8	0.9	2.1
44925	59.4	-50.8	ALL	MSLP	SUR	140	0	0	1.0	1.0	1.5
49705	46.8	-27.7	ALL	MSLP	SUR	3	0	0	0.1	-0.2	0.3
61555	44.7	-63.6	ALL	MSLP	SUR	14	0	0	1.3	-3.6	3.8
62503	35.5	-15.5	ALL	MSLP	SUR	551	0	0	0.8	0.0	0.8
62507	35.4	-18.3	ALL	MSLP	SUR	361	0	0	1.0	0.3	1.0
62508	52.0	-13.0	ALL	MSLP	SUR	108	0	0	1.3	0.8	1.5
62515	45.0	-16.6	ALL	MSLP	SUR	618	0	0	0.9	0.2	0.9
62518	44.5	-15.2	ALL	MSLP	SUR	147	0	0	2.1	-0.7	2.2
62552	52.2	-18.2	ALL	MSLP	SUR	696	0	0	1.4	-0.1	1.4
62553	47.3	-21.4	ALL	MSLP	SUR	641	1	0	1.1	0.2	1.1
62554	48.1	-20.9	ALL	MSLP	SUR	599	0	0	0.9	0.3	1.0
62555	49.3	-17.6	ALL	MSLP	SUR	659	0	0	1.0	0.1	1.0
62556	48.9	-22.2	ALL	MSLP	SUR	679	0	0	0.9	0.2	0.9
62603	49.9	-2.9	ALL	MSLP	SUR	1	0	0	0.0	-0.9	0.9
62697	62.8	-18.2	ALL	MSLP	SUR	1317	0	0	1.0	0.1	1.0
62705	55.6	-12.7	ALL	MSLP	SUR	1	0	0	0.0	-0.1	0.1
62712	51.9	-23.2	ALL	MSLP	SUR	678	0	0	0.8	0.2	0.8
62713	45.8	-28.9	ALL	MSLP	SUR	774	1	0	1.0	0.2	1.0
62803	58.4	-13.3	ALL	MSLP	SUR	1784	5	0	1.0	0.2	1.0
62804	55.9	-21.1	ALL	MSLP	SUR	751	0	0	1.0	0.0	1.0

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62927	48.4	-23.4	ALL	MSLP	SUR	121	0	0	0.9	0.7	1.1
64528	62.7	-29.4	ALL	MSLP	SUR	73	0	0	2.1	-0.7	2.2
64561	58.3	-52.8	ALL	MSLP	SUR	982	3	0	1.1	0.3	1.1
64563	62.2	-36.2	ALL	MSLP	SUR	1689	1	0	1.1	-0.4	1.2
65593	61.5	-28.0	ALL	MSLP	SUR	587	24	4	2.1	-0.7	2.2
65594	61.2	-22.8	ALL	MSLP	SUR	1873	9	0	1.2	0.0	1.2
65596	58.3	-59.5	ALL	MSLP	SUR	884	1	0	1.4	-0.3	1.4
65597	59.7	-41.1	ALL	MSLP	SUR	1599	3	0	1.0	-0.2	1.1
65598	60.6	-46.6	ALL	MSLP	SUR	1493	29	2	1.5	-0.1	1.5
WIND SPEED											
41530	35.3	-28.9	ALL	SPEED	SUR	263	0	0	1.7	-1.7	2.4
41611	15.2	-56.9	ALL	SPEED	SUR	112	0	0	1.0	0.2	1.0
41612	16.6	-58.7	ALL	SPEED	SUR	264	0	0	1.2	-2.2	2.5
41613	21.8	-64.7	ALL	SPEED	SUR	220	0	0	1.5	-1.1	1.9
44513	53.0	-23.5	ALL	SPEED	SUR	317	0	0	2.5	-2.3	3.4
44613	56.5	-33.4	ALL	SPEED	SUR	1	0	0	0.0	18.5	18.5
44624	56.9	-17.8	ALL	SPEED	SUR	778	0	0	2.1	-1.0	2.3
44726	58.7	-7.5	ALL	SPEED	SUR	753	3	0	1.9	-1.2	2.2
44742	45.9	-21.8	ALL	SPEED	SUR	324	0	0	1.8	0.0	1.8
44762	45.2	-25.1	ALL	SPEED	SUR	329	0	0	1.3	-0.4	1.4
44773	54.2	-41.0	ALL	SPEED	SUR	366	0	0	1.7	-0.9	1.9
44775	61.2	-35.6	ALL	SPEED	SUR	1	0	0	0.0	10.1	10.1
49705	46.8	-27.7	ALL	SPEED	SUR	3	0	0	1.4	2.0	2.4
62518	44.5	-15.2	ALL	SPEED	SUR	247	0	0	1.9	-1.5	2.4
62552	52.2	-18.2	ALL	SPEED	SUR	681	0	0	1.4	-1.0	1.7
62553	47.3	-21.4	ALL	SPEED	SUR	631	0	0	1.4	0.0	1.4
62603	49.9	-2.9	ALL	SPEED	SUR	1	0	0	0.0	-1.4	1.4
62697	62.8	-18.2	ALL	SPEED	SUR	531	2	0	2.7	-0.9	2.9
62705	55.6	-12.7	ALL	SPEED	SUR	1	0	0	0.0	-4.1	4.1
62803	58.4	-13.3	ALL	SPEED	SUR	571	1	0	3.2	-3.7	4.9
WIND DIRECTION											
41530	35.3	-28.9	ALL	DIRN.	SUR	175	0	0	11.5	7.8	13.9
41611	15.2	-56.9	ALL	DIRN.	SUR	112	0	0	8.9	17.3	19.4
41612	16.6	-58.7	ALL	DIRN.	SUR	253	0	0	12.9	-0.3	12.9
41613	21.8	-64.7	ALL	DIRN.	SUR	182	0	0	26.4	10.6	28.5
44513	53.0	-23.5	ALL	DIRN.	SUR	217	0	0	90.9	17.0	92.5
44613	56.5	-33.4	ALL	DIRN.	SUR	1	0	0	0.0	-18.7	18.7
44624	56.9	-17.8	ALL	DIRN.	SUR	675	0	0	28.4	15.0	32.1
44726	58.7	-7.5	ALL	DIRN.	SUR	500	3	1	21.7	0.1	21.7
44742	45.9	-21.8	ALL	DIRN.	SUR	254	0	0	18.1	-6.8	19.4
44762	45.2	-25.1	ALL	DIRN.	SUR	248	0	0	18.3	-5.9	19.2
44773	54.2	-41.0	ALL	DIRN.	SUR	267	0	0	35.3	-5.3	35.6
44775	61.2	-35.6	ALL	DIRN.	SUR	1	0	0	0.0	2.0	2.0
49705	46.8	-27.7	ALL	DIRN.	SUR	3	0	0	14.5	-10.7	18.0
62518	44.5	-15.2	ALL	DIRN.	SUR	183	0	0	30.8	-6.3	31.5
62552	52.2	-18.2	ALL	DIRN.	SUR	528	0	0	16.0	5.3	16.8
62553	47.3	-21.4	ALL	DIRN.	SUR	523	0	0	16.4	4.7	17.1
62603	49.9	-2.9	ALL	DIRN.	SUR	1	0	0	0.0	1.5	1.5
62697	62.8	-18.2	ALL	DIRN.	SUR	465	2	0	40.3	-4.5	40.6
62705	55.6	-12.7	ALL	DIRN.	SUR	1	0	0	0.0	-1.3	1.3
62803	58.4	-13.3	ALL	DIRN.	SUR	485	1	0	26.4	-3.0	26.6

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures:
Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3475	0	1	1.7	0.0	3476	0	2	0	7.6	1.2
ACA	1473	0	1	1.9	0.1	1537	0	2	1	6.6	0.5
AEA	374	1	4	2.6	0.7	368	0	2	0	8.5	2.2
AEL	235	0	4	2.0	-0.5	238	0	4	0	7.8	1.7
AEY	32	0	3	1.6	0.2	32	0	9	0	8.8	1.8
AFB	39	3	5	3.2	1.3	43	0	12	0	14.1	1.5
AFL	146	1	3	1.8	0.5	143	0	6	1	8.9	1.1
AFR	1008	0	7	1.8	0.1	1020	0	8	0	8.0	1.3
AIH	331	0	2	2.0	-0.1	320	0	4	0	9.4	0.7
AJM	45	4	2	1.6	0.1	45	0	2	0	7.7	1.5
AMX	163	2	2	2.0	-0.2	162	1	2	0	7.9	1.6
ANZ	234	0	2	2.0	-0.6	234	0	2	1	6.5	0.2
AOM	233	1	2	1.8	0.9	237	0	2	0	7.6	1.3
ATN	57	0	7	2.8	-2.5	58	0	100	0	20.1	7.5
AUA	76	0	1	1.8	-0.8	78	0	1	0	7.6	1.1
AVA	164	0	2	2.3	0.5	166	1	2	0	8.2	1.5
AZA	554	0	5	1.8	0.0	561	0	5	0	8.6	1.7
BAL	648	0	16	2.0	-0.2	659	0	16	0	9.2	1.8
BAW	1734	1	11	1.9	0.0	1758	0	11	0	7.6	1.1
BBB	33	0	0	1.7	0.1	33	0	3	0	8.5	0.3
BWA	103	2	10	3.8	2.9	107	0	7	1	11.9	1.0
CDN	345	0	0	1.5	0.3	347	0	1	0	5.9	1.1
CFC	31	0	19	2.9	0.7	31	0	16	0	8.3	1.9
CFG	700	0	3	2.2	-1.0	709	0	3	0	8.0	1.4
CKT	95	0	3	1.8	0.3	101	0	9	0	10.6	-0.4
CLX	275	0	1	1.9	-0.4	280	0	2	0	7.1	0.5
CMM	329	0	1	1.8	0.3	333	0	2	1	6.5	0.5
COA	744	1	4	1.9	0.5	756	0	3	1	8.8	1.4
CRL	215	0	1	2.0	0.2	222	0	2	0	8.1	0.7
CSA	24	0	0	1.3	-0.7	24	0	0	0	7.6	-0.3
CTB	139	1	1	1.6	0.0	141	0	3	0	7.8	0.8
CTM	44	0	18	3.0	-1.3	47	0	21	0	7.2	0.4
CUB	277	0	6	2.0	0.9	268	0	100	0	8.5	1.4
DAL	3494	0	1	1.8	0.1	3527	0	2	0	7.9	1.0
DHL	77	16	100	4.7	-3.0	79	0	27	0	9.5	-0.1
DLH	2862	0	6	1.8	0.2	2860	0	9	2	6.9	0.8
DOA	44	0	2	1.6	-0.7	44	0	2	0	7.4	0.1
ELY	159	0	6	1.8	0.3	162	0	6	0	8.8	1.1
EWW	139	1	68	3.1	1.2	142	1	100	0	17.7	5.5
FDX	251	0	0	1.7	0.5	249	0	3	0	8.0	0.5
FIN	414	0	3	1.9	0.6	413	0	5	1	7.3	0.5
GAF	198	0	2	2.1	0.7	202	0	1	1	6.4	0.4
HLF	139	0	1	2.1	-1.3	142	1	4	0	7.9	1.7
IBE	1255	2	16	2.3	0.3	1263	0	17	0	10.0	1.6
ICE	768	0	1	1.7	0.2	758	0	2	0	7.4	1.0
KLM	2496	0	2	1.9	0.3	2545	0	2	1	7.1	1.0
LDA	194	1	6	2.1	-0.7	198	0	7	1	7.9	0.6
LDI	233	0	20	2.1	-1.0	231	0	20	0	8.3	1.2
LIB	124	2	5	1.9	1.1	124	1	4	0	9.4	2.3
LOT	422	0	1	2.1	-1.0	426	0	3	0	9.1	0.6
LTU	657	0	4	1.8	0.1	667	0	5	0	7.9	1.1
MPH	792	1	2	1.9	-0.5	796	0	2	0	8.1	0.3
NWA	2930	0	2	1.9	0.8	2995	0	2	0	8.0	0.9
OAL	84	0	7	3.4	2.6	82	0	4	0	8.2	1.5
PAC	50	0	6	2.8	0.4	51	0	6	0	9.2	0.6
RAM	43	0	2	2.3	-1.3	40	0	3	0	10.1	1.8
RCH	162	1	100	3.0	1.1	162	0	100	0	12.0	1.9
RJA	58	0	2	1.5	0.7	61	2	5	0	6.2	0.3
ROY	58	0	0	1.7	0.6	62	0	8	0	8.7	-0.5

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RRR	47	0	21	2.2	-0.6	47	0	21	0	10.0	3.0
SAB	38	0	11	1.8	0.2	38	0	8	0	6.5	1.5
SAS	993	0	1	1.8	0.2	996	0	2	0	7.1	0.9
SIA	90	1	10	1.9	-1.1	92	0	8	0	6.7	0.5
SLR	76	1	24	1.3	-0.5	80	0	26	0	7.8	0.1
SPP	140	0	6	2.5	-0.7	137	1	5	0	10.6	1.4
SSV	47	0	2	1.7	0.3	47	2	2	0	4.8	0.1
SVA	105	1	3	1.5	0.1	108	0	100	0	10.3	2.1
SWR	220	0	4	1.8	0.0	224	0	4	0	8.4	1.3
TAP	368	1	3	1.8	-0.2	366	0	4	0	8.7	2.0
TOW	70	0	0	1.6	-0.1	73	0	4	0	9.2	1.2
TSC	199	1	6	2.1	-0.1	201	0	8	0	9.8	0.9
TWA	1592	0	2	2.0	-0.1	1582	0	3	0	8.8	1.3
UAL	1822	0	1	2.0	-0.4	1838	0	2	0	6.9	0.7
ULE	224	0	1	1.9	0.5	226	0	2	0	8.6	1.8
UPS	83	4	20	2.4	0.5	83	0	16	0	7.6	1.8
USA	456	1	2	1.6	-0.3	451	0	2	0	8.2	1.4
VIR	259	0	1	1.8	-0.3	262	0	4	0	8.9	1.5
BA	8571	0	11	1.4	0.5	8570	0	11	0	6.3	1.3
IT	34	0	3	1.2	-0.7	34	0	3	0	4.5	0.4
KL	4422	0	13	1.4	0.6	4422	0	13	0	5.9	1.1
LH	324	0	0	1.6	0.6	323	0	1	0	5.8	0.8
N	363	1	100	3.0	1.5	372	0	2	1	7.1	-0.2

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	10	0	16.8	18.1	6.6
DBBH	12	Z	100	22	0	15.3	16.5	6.3
DBLK	00	Z	100	1	0	0.0	2.0	2.0
DBLK	12	Z	100	11	0	12.8	26.6	23.3
EHOA	12	Z	100	3	0	19.9	35.2	29.0
FNOR	00	Z	100	13	0	12.1	14.3	7.7
FNOR	12	Z	100	10	0	14.2	14.7	3.7
FNOU	00	Z	100	14	0	11.8	12.1	3.0
FNOU	12	Z	100	12	0	12.0	14.0	-7.2
FNPH	00	Z	100	14	0	10.0	10.1	-1.7
FNPH	12	Z	100	14	0	11.3	16.5	-11.9
FNRS	00	Z	100	11	0	15.2	15.2	-0.5
FNRS	12	Z	100	9	0	35.0	39.5	-18.3
FNTR	00	Z	100	1	0	0.0	0.0	0.0
JBOA	00	Z	100	1	0	0.0	10.0	10.0
JCCX	00	Z	100	1	0	0.0	21.0	21.0
JDWX	00	Z	100	1	0	0.0	20.0	20.0
LDWR	00	Z	100	31	0	9.4	10.0	3.6
LDWR	12	Z	100	28	0	11.8	12.0	-2.3
OXYH2	00	Z	100	21	0	31.1	33.0	11.0
OXYH2	12	Z	100	21	1	18.5	25.2	17.0
SHIIIPS	00	Z	100	1	0	0.0	42.0	42.0
SHIPAF	00	Z	100	2	0	7.5	21.8	20.5
SHIPAF	12	Z	100	1	0	0.0	54.0	54.0
SHIPS	00	Z	100	9	0	45.7	45.8	-1.8
SHIPS	12	Z	100	2	0	0.5	54.5	54.5
UCKZ	12	Z	100	1	0	0.0	55.0	55.0
V2EZ	00	Z	100	12	0	23.1	23.2	2.4
V2EZ	12	Z	100	11	0	21.4	31.1	22.6
V2GH	00	Z	100	1	0	0.0	9.0	9.0
V2GH	12	Z	100	1	0	0.0	9.0	9.0
XXOA	12	Z	100	2	0	40.0	61.0	46.0
03953	00	Z	100	30	0	15.8	18.7	9.9
03953	12	Z	100	31	0	17.2	18.5	6.6
04018	00	Z	100	31	0	10.9	16.9	12.9
04018	12	Z	100	31	0	15.1	28.7	24.4
04220	00	Z	100	30	0	15.7	19.3	11.3
04220	12	Z	100	31	0	14.3	23.9	19.2
04270	00	Z	100	31	0	15.3	15.3	-1.2
04270	12	Z	100	30	0	13.2	14.8	6.7
04339	00	Z	100	31	0	13.5	14.3	4.6
04339	12	Z	100	31	0	8.6	16.7	14.3
04360	00	Z	100	31	0	13.6	13.6	0.2
04360	12	Z	100	30	0	11.0	14.0	8.6
08001	00	Z	100	17	0	17.6	17.7	2.1
08001	12	Z	100	17	0	15.6	18.9	-10.8
08508	00	Z	100	31	0	14.4	15.7	6.4
08508	12	Z	100	28	0	15.9	15.9	0.4
08522	00	Z	100	8	0	12.3	17.6	12.6
08522	12	Z	100	11	0	21.0	21.0	-0.1
2GH	00	Z	100	1	0	0.0	4.0	-4.0
60020	00	Z	100	29	0	15.0	31.2	27.4
60020	12	Z	100	29	0	18.5	21.8	11.6
71600	00	Z	100	30	0	14.2	14.3	-1.7
71600	12	Z	100	30	0	15.5	15.9	-3.6
72201	00	Z	100	26	0	28.4	43.7	33.2
72201	12	Z	100	27	0	30.4	46.8	35.6
72402	00	Z	100	30	0	36.1	36.8	7.5
72402	12	Z	100	28	0	21.5	31.7	23.4
74494	00	Z	100	20	0	18.3	33.2	27.8
74494	12	Z	100	23	0	22.2	51.2	46.1
78016	12	Z	100	25	0	11.4	11.9	3.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	17	0	15.9	18.5	9.4
DBBH	12	Z	500	23	0	10.7	11.2	3.2
DBLK	00	Z	500	1	0	0.0	16.0	-16.0
DBLK	12	Z	500	11	0	15.2	15.2	-0.6
EHOA	12	Z	500	4	0	6.9	28.6	27.8
FNOR	00	Z	500	13	0	14.3	17.5	10.1
FNOR	12	Z	500	11	0	11.3	12.5	5.4
FNOU	00	Z	500	15	0	10.2	12.6	7.5
FNOU	12	Z	500	14	0	11.7	11.8	1.9
FNPH	00	Z	500	15	0	11.5	12.2	4.1
FNPH	12	Z	500	14	0	15.5	15.7	-2.0
FNRS	00	Z	500	11	0	14.1	15.0	5.0
FNRS	12	Z	500	9	0	21.7	21.8	-2.9
FNTR	00	Z	500	1	0	0.0	8.0	-8.0
JBOA	00	Z	500	1	0	0.0	4.0	4.0
JCCX	00	Z	500	1	0	0.0	18.0	18.0
JDWX	00	Z	500	1	0	0.0	2.0	2.0
LDWR	00	Z	500	31	0	12.0	13.7	6.6
LDWR	12	Z	500	29	0	9.6	9.6	0.8
OXYH2	00	Z	500	22	0	10.7	10.9	-2.2
OXYH2	12	Z	500	22	0	11.7	12.4	-4.1
SHIIIPS	00	Z	500	1	0	0.0	8.0	8.0
SHIPAF	00	Z	500	2	0	3.5	8.3	7.5
SHIPAF	12	Z	500	1	0	0.0	9.0	9.0
SHIPS	00	Z	500	8	0	12.7	14.1	6.1
SHIPS	12	Z	500	2	0	4.5	8.7	7.5
UCKZ	12	Z	500	1	0	0.0	21.0	21.0
V2EZ	00	Z	500	13	0	17.7	18.6	5.9
V2EZ	12	Z	500	12	0	18.8	21.5	10.4
V2GH	00	Z	500	1	0	0.0	5.0	-5.0
V2GH	12	Z	500	1	0	0.0	5.0	5.0
XXOA	12	Z	500	3	0	11.0	13.6	-8.0
ZDLG	12	Z	500	1	0	0.0	24.0	24.0
03953	00	Z	500	31	0	9.7	14.2	10.5
03953	12	Z	500	31	0	8.2	11.8	8.5
04018	00	Z	500	31	0	10.6	14.0	9.3
04018	12	Z	500	31	0	11.6	13.8	7.5
04220	00	Z	500	31	0	14.1	14.1	0.3
04220	12	Z	500	31	0	12.7	13.1	3.1
04270	00	Z	500	31	0	9.7	9.8	1.5
04270	12	Z	500	30	0	10.7	10.8	-0.9
04339	00	Z	500	31	0	12.2	13.3	5.4
04339	12	Z	500	31	0	10.8	10.9	1.6
04360	00	Z	500	30	0	10.4	11.0	3.6
04360	12	Z	500	30	0	10.9	11.4	-3.3
08001	00	Z	500	19	0	17.9	20.6	10.3
08001	12	Z	500	19	0	14.7	14.8	0.4
08508	00	Z	500	31	0	12.2	17.2	12.2
08508	12	Z	500	28	0	12.6	15.0	8.3
08522	00	Z	500	8	0	11.0	18.0	14.3
08522	12	Z	500	12	0	11.5	16.6	12.0
60020	00	Z	500	29	0	6.1	23.8	23.0
60020	12	Z	500	29	0	8.4	17.1	14.9
71600	00	Z	500	30	0	13.3	15.1	-7.2
71600	12	Z	500	30	0	11.5	11.6	1.9
72201	00	Z	500	28	0	7.3	13.8	11.7
72201	12	Z	500	28	0	9.5	12.9	8.8
72402	00	Z	500	29	0	16.9	16.9	1.1
72402	12	Z	500	27	0	7.5	9.0	5.0
74494	00	Z	500	28	0	11.3	11.9	3.7
74494	12	Z	500	31	0	12.3	13.0	4.2
78016	12	Z	500	25	0	8.1	10.0	5.9

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	9	0	0	0.0	-1.7	0.5
DBBH	12	V	100	22	0	0	0.0	-0.9	0.4
DBLK	00	V	100	1	0	0	2.0	-2.8	-1.9
DBLK	12	V	100	10	0	0	2.0	0.5	-1.8
EHOA	12	V	100	3	0	0	2.1	-1.8	1.8
FNOR	00	V	100	13	0	0	2.1	-0.3	0.0
FNOR	12	V	100	10	0	0	3.1	0.4	1.5
FNOU	00	V	100	13	0	0	2.7	-1.0	-1.4
FNOU	12	V	100	12	0	0	2.6	-1.1	-0.8
FNPH	00	V	100	15	0	0	2.9	-0.3	0.0
FNPH	12	V	100	14	0	0	1.8	-0.6	1.1
FNRS	00	V	100	11	0	0	1.5	0.1	0.6
FNRS	12	V	100	9	0	0	1.8	-1.6	2.5
FNTR	00	V	100	1	0	0	1.8	5.0	5.2
JBOA	00	V	100	1	0	0	1.8	0.0	1.1
JCCX	00	V	100	1	0	0	1.8	-3.7	-5.3
JDWX	00	V	100	1	0	0	1.8	-0.8	-1.8
LDWR	00	V	100	31	0	0	1.8	0.1	0.0
LDWR	12	V	100	27	0	0	2.0	-0.2	-0.3
OXYH2	00	V	100	21	0	0	1.5	-0.5	0.4
OXYH2	12	V	100	22	0	0	2.4	0.1	-0.6
SHIPAF	00	V	100	2	0	0	3.1	2.4	-0.8
SHIPS	00	V	100	4	0	0	3.1	1.1	-0.3
SHIPS	12	V	100	2	0	0	3.1	-3.3	1.9
UCKZ	12	V	100	1	0	0	3.7	6.7	-2.5
V2EZ	00	V	100	12	0	0	3.7	-1.9	-0.2
V2EZ	12	V	100	11	0	0	2.0	-0.4	-1.0
V2GH	00	V	100	1	0	0	1.8	4.1	-1.9
V2GH	12	V	100	1	0	0	1.8	-0.5	-1.1
XXOA	12	V	100	1	0	0	4.7	-1.4	0.3
03953	00	V	100	29	0	0	2.3	0.1	0.9
03953	12	V	100	31	0	0	2.1	-0.2	0.6
04018	00	V	100	29	0	0	1.4	0.1	-0.6
04018	12	V	100	30	0	0	2.1	-0.7	-0.6
04220	00	V	100	30	0	0	2.6	0.1	0.6
04220	12	V	100	31	0	0	1.6	0.1	0.2
04270	00	V	100	31	0	0	1.7	-0.6	0.9
04270	12	V	100	30	0	0	2.2	-0.7	0.5
04339	00	V	100	31	0	0	2.6	1.6	0.2
04339	12	V	100	31	0	0	2.2	1.0	0.2
04360	00	V	100	30	0	0	2.6	0.2	-0.4
04360	12	V	100	30	0	0	2.0	-0.3	-0.4
08001	00	V	100	16	0	0	7.0	0.1	0.4
08001	12	V	100	16	0	0	2.0	-0.9	1.1
08508	00	V	100	31	0	0	2.7	1.4	0.8
08508	12	V	100	28	0	0	2.6	-0.4	0.9
08522	00	V	100	8	0	0	1.9	-0.3	-1.2
08522	12	V	100	11	0	0	1.9	-0.4	1.5
60020	00	V	100	29	0	0	3.7	1.8	0.2
60020	12	V	100	29	0	0	3.3	0.4	1.5
71600	00	V	100	30	0	0	2.6	-0.1	-0.2
71600	12	V	100	30	0	0	2.7	-0.5	0.2
72201	00	V	100	26	0	0	1.4	-0.2	0.4
72201	12	V	100	27	0	0	3.5	-0.5	-1.1
72402	00	V	100	30	0	0	2.6	-2.6	-0.2
72402	12	V	100	28	0	0	4.1	0.3	0.2
74494	00	V	100	18	0	0	2.6	0.2	0.1
74494	12	V	100	23	0	0	3.0	0.6	0.2
78016	12	V	100	24	0	0	4.6	-1.6	0.0

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: May, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS                NUM    NUM     %
IDENT  TIME  ELM  LEV     OBS   GROSS   REJ     RMS    UBIAS   VBIAS

DBBH    00    V   500     17      0      0      0.0    -2.2     1.8
DBBH    12    V   500     23      0      0      3.8     0.3    -1.2
DBLK    00    V   500      1      0      0      2.7    -0.9    -0.8
DBLK    12    V   500     11      0      0      2.7     0.7    -1.0
EHOA    12    V   500      4      0      0      3.2    -1.8     0.1

FNOR    00    V   500     13      0      0      3.2    -0.8    -1.0
FNOR    12    V   500     11      0      0      2.5     0.0    -0.6
FNOU    00    V   500     15      0      0      2.6    -1.2    -0.3
FNOU    12    V   500     14      0      0      3.6    -2.1     0.1
FNPH    00    V   500     16      0      0      3.6     0.0    -0.9

FNPH    12    V   500     14      0      0      2.5    -1.0    -0.6
FNRS    00    V   500     11      0      0      3.9     0.5     0.7
FNRS    12    V   500      9      0      0      2.9    -0.6     0.0
JBOA    00    V   500      1      0      0      2.9    -0.9    -0.6
JCCX    00    V   500      1      0      0      2.9    -5.9    -9.0

JDWX    00    V   500      1      0      0      2.9    -0.9    -1.6
LDWR    00    V   500     31      0      3      2.9     0.7    -0.2
LDWR    12    V   500     29      0      0      3.9     0.6     0.1
OXYH2   00    V   500     22      0      0      4.0    -0.1     1.7
OXYH2   12    V   500     22      0      0      3.7     0.4    -1.2

SHIPAF  00    V   500      2      0      0      3.2    -3.2     2.7
SHIPAF  12    V   500      1      0      0      3.2     5.0    -4.1
SHIPS   00    V   500      6      0      0      3.2     1.1     0.1
SHIPS   12    V   500      2      0      0      3.2    -0.7    -0.9
UCKZ    12    V   500      1      0      0      3.1    -1.0    -1.1

V2EZ    00    V   500     13      0      0      3.1     0.0     0.8
V2EZ    12    V   500     12      0      0      2.4    -0.5     2.0
V2GH    00    V   500      1      0      0      3.4     0.4     1.6
V2GH    12    V   500      1      0      0      3.4    -1.1    -1.5
XXOA    12    V   500      3      0     33      2.4   -13.5     5.2

ZDLG    12    V   500      1      0      0      2.4    -1.4    -0.5
03953   00    V   500     31      0      0      2.5     0.2    -0.5
03953   12    V   500     31      0      0      3.8    -0.1    -0.4
04018   00    V   500     30      0      0      3.0    -0.4     0.3
04018   12    V   500     31      0      0      2.5     0.3    -0.8

04220   00    V   500     30      0      0      5.6     0.3     0.6
04220   12    V   500     31      0      0      3.1     0.3    -0.7
04270   00    V   500     31      0      0      2.3    -0.7     1.4
04270   12    V   500     30      0      0      3.1     0.3    -0.3
04339   00    V   500     31      0      0      3.2    -0.1     0.5

04339   12    V   500     30      0      0      3.6    -0.8     0.4
04360   00    V   500     29      0      0      3.7    -0.6     0.2
04360   12    V   500     30      0      0      2.8    -0.7    -0.4
08001   00    V   500     19      0      0      3.0     0.8    -1.1
08001   12    V   500     19      0      0      4.1     0.1    -1.4

08508   00    V   500     31      0      0      3.1     1.4    -0.6
08508   12    V   500     28      0      0      3.4    -0.1    -1.0
08522   00    V   500      8      0      0      3.1    -0.8     1.4
08522   12    V   500     12      0      0      3.1    -0.9     0.2
60020   00    V   500     29      0      0      4.0     0.8     0.0

60020   12    V   500     29      0      0      3.5    -0.3    -1.1
71600   00    V   500     30      0      0      4.1     2.5    -0.4
71600   12    V   500     30      0      0      5.0     1.6     0.9
72201   00    V   500     27      0      0      4.1    -0.1     0.6
72201   12    V   500     27      0      0      2.1    -0.4    -0.3

72402   00    V   500     29      0      0      3.0     1.1     0.3
72402   12    V   500     27      0      0      3.5    -0.9     0.4
74494   00    V   500     28      0      0      3.5     0.1     0.2
74494   12    V   500     31      0      0      2.4    -0.3     1.0
78016   12    V   500     25      0      4      3.7    -0.5     1.3
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45